

TRAFFIC COMMISSION REPORT

January 27, 2011

Item VB

STRATEGIC PLAN

ISSUE:

The City Manager's Office has requested that all boards, committees and commissions review the attached outline for the 2011 City strategic plan and provide any comments and suggestions for their consideration.

BACKGROUND:

Every 10 years the City Council adopts a strategic plan for the next decade. City staff desires early input from all the City's boards and commissions as it begins developing the plan.

RECOMMENDATIONS:

Review and make suggestions. Suggestions do not have to be related to traffic.

City of Burbank

Strategic Plan Focused Objectives



CITY OF BURBANK MISSION STATEMENT

The City of Burbank is a special urban community. It is here that residents find tranquil neighborhoods, peace in their homes, and protection from the potentially negative aspects of major industry and population densities. Our high quality of life and level of municipal services are achieved by preserving and enhancing the City's economic prosperity, while enhancing and preserving residential neighborhoods.

It is the mission of the City government to balance this desire for traditional values and lifestyles with contemporary and fiscally responsible municipal service while moving to the future with thoughtful and stable economic progress, within a system of government that respects legitimate differences of opinion.

Strategic Plan Focused Objectives and Goals

Department/Board/Commission:_____

- 1. A Safe and Prepared Burbank Community**
- 2. Preserve Burbank's High Quality of Life and Small-Town Character**
- 3. Balanced, Vibrant Burbank Economy**
- 4. Transform, Create and Deliver Burbank's Community Services**
- 5. Cultivate an Innovative and Effective Government to Ensure Burbank's Financial Strength**
- 6. Champion Effective Partnerships**
- 7. Communicate Burbank's Integrity through Open and Transparent Government**

8. Evolve Burbank's Transportation

9. Invest in Burbank's Infrastructure

10. Protect and Sustain Burbank's Environment

TRAFFIC COMMISSION REPORT

January 27, 2011

Item VC

REPORT OF SCHOOL SAFETY SUBCOMMITTEE

ISSUE:

The School Safety Subcommittee has evaluated several schools and has prepared recommendations to improve traffic safety.

BACKGROUND:

The School Safety Subcommittee has discussed safety issues with several school administrators and prepared recommendations. Staff has not had time to evaluate and prepare technical information for these recommendations.

RECOMMENDATIONS:

Discuss the Subcommittee recommendations. Staff will review the recommendations and begin our analysis and report back at a future meeting.

TRAFFIC COMMISSION REPORT

January 27, 2011

Item VD

DISCUSSION OF PARKING ON CORDOVA STREET

ISSUE:

Traffic Commission asked for information about parking on Cordova Street in response to a Burbank Leader article concerning parking issues.

BACKGROUND:

Cordova Street south of Magnolia Boulevard is a residential street near Porto's Bakery. The on-street parking is restricted to residents only on weekdays between the hours of 8 AM and 6 PM. However, the Traffic Commission issued a total of 20 parking permits to teachers at Theodore Roosevelt School to allow them to park on the street since on-site parking at the school is limited. The resident only parking is governed by Burbank Municipal Code 6-1-1004 *Preferential Parking in Residential Areas*.

In December 2007, the Traffic Commission received a petition to expand the hours of restriction to 24 hours for 7 days per week. Such restrictions would require a change in the Burbank Municipal Code. The staff report is attached as Attachment 1. Staff determined through studies on the weekend that any weekend non-resident parking affected only the several residents near Magnolia Boulevard, and the non-resident parking did not occur throughout the street. Staff recommended that the municipal code not be changed since this is the only street (and only a portion of this street) in Burbank affected by weekend parking. Additionally, all residences on Cordova Street have off-street parking.

The residential parking restrictions were originally installed to provide relief to residents from weekday employee parking. A change in the Burbank Municipal Code for one street would likely initiate requests for a range parking restrictions tailored to resident needs on a specific street, rather to solve a general citywide issue. Secondly, parking enforcement is often not available on weekends because of personnel cutbacks, and a change in the municipal code would raise resident expectations which may not be realistic.

Traffic Commission discussed parking for Porto's at its February 2008 meeting, as shown in Attachment 2. Various options for increasing Porto's off-street parking were discussed. Various maps were provided for those staff reports. The existing residential land uses are shown in Attachment 3. Attachment 4 shows the existing parking supply on Cordova Street, and Attachment 5 shows the restrictions on all streets intersecting Magnolia Boulevard. Attachment 6 shows the existing Porto's parking and the adjacent public lot.

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RECOMMENDATIONS:

Staff recommends that no action be taken at this time.

ATTACHMENTS:

1. December 2007 staff report
2. February 2008 staff report
3. Existing Land Use
4. Existing Parking Supply
5. Magnolia Boulevard Parking
6. Existing Off Street Parking

TRAFFIC AND TRANSPORTATION COMMITTEE REPORT

December 13, 2007

ITEM F

Petition to Increase Parking Restrictions in the 900 Block of Cordova Street

ISSUE:

Residents of the 900 block of Cordova Street submitted a petition to modify the restriction time periods on Cordova Street from weekdays between 8 AM and 6 PM to everyday (including Saturday and Sunday). The request further requests that the hours of parking restriction coincide with the operating hours of nearby Porto's Bakery, whom the petitioners believe is the cause of their problem. Porto's operating hours are 6:30 AM to 7:30 PM, Monday through Saturday and 7:00 AM to 4:00 PM on Sunday.

RECOMMENDATION:

Staff recommends that the current days and time periods that restrictions are in place be retained. Modification of the Burbank Municipal Code to enable a wide variation of parking restrictions and time periods will cause confusion to the parking public, it will be very problematic to enforce, and the residential parking restrictions will become more difficult to manage as disparate restrictions are placed on more and more streets.

DISCUSSION:

Burbank has had time restricted residential parking for over 25 years. The program was begun to regulate employee parking in residential neighborhoods, and many of the restricted streets were established by City Council action prior to the codification of specific rules and requirements. Burbank currently has three levels of residential parking restrictions, as listed below:

1. A two-hour parking restriction with permits for residents,
2. A one-hour restriction with permits for residents, and
3. Resident only parking restriction (no one can park but residents and their visitors).

For all restricted parking streets, residents receive a minimum of three permits and up to five permits with demonstrated need. These permits are not affixed to any vehicle and may be used on any vehicle. All restricted streets are controlled between the hours of 8 AM and 6 PM, which is the standard, normal hours of parking restrictions throughout the region.

Cordova Street is a unique street for several reasons. The street has resident only parking restrictions, the most restricted of controls, and these restrictions have been in place for about a decade. Theodore Roosevelt School is located mid-block on Cordova Street with limited parking for teachers. Cordova Street is near Hollywood way and Magnolia

TRAFFIC AND TRANSPORTATION COMMITTEE REPORT

October 11, 2007

Boulevard, and both streets have a number of active businesses, some of which operate on weekends or at odd hours. Burbank has provided considerable on-street and off-street parking in the area, some of which is not well used on weekends. The available parking supply is shown in Attachment 1. In addition to the public parking shown on the map, each residential lot on Cordova Street has at least two private off-street parking places available to residents.

Residents of the 900 block of Cordova Street submitted a petition to change restriction days and times from the standard conditions in place throughout the city. The Petitioner locations are shown in Attachment 2 and the petition is attached. The petition asks for restrictions and enforcement all seven days per week during the operating hours of Porto's Bakery.

Staff surveyed Cordova Street on several weekdays and on several weekend days for parked vehicles. The maximum number of vehicles found on Cordova Street was a Saturday morning, with about 15 vehicles parked in front of the first five homes on the street (four of the parked on-street vehicles were residents of Cordova Street). Later on Saturday and on Sunday, vehicle parking ranged from four vehicles to 8 vehicles, with Saturday having the most parked vehicles at any one time. The vehicle turnover on the street suggested that most of the parked vehicles were from patrons of the businesses, including Porto's.

Porto's Bakery is a very popular destination in the Hollywood Way / Magnolia Boulevard area. Porto's leases spaces about three blocks away from the store for their employees and employees are forbidden from parking in the residential neighborhood throughout the week. Raul Porto met with many of the Cordova Street residents to discuss issues and to attempt a resolution. The residents continue to desire additional restrictions.

Staff feels that expanding the restrictions on Cordova Street will realistically benefit a only few homes near Magnolia Boulevard for a few hours a weekend, but the result will have wide implications relative to expansion to other areas of the city, each with their own set of unique parking restriction requirements, enforcement manpower requirements, and parking program management requirements. These wider implications will result in a more costly parking program with more confusion about when and where to park. Other options should be explored before the current rules are opened up to greater resident control of who parks on public streets.

TRAFFIC AND TRANSPORTATION COMMITTEE REPORT

February 14, 2008

Item D

Parking for Porto's Bakery

ISSUE:

The Traffic and Transportation Committee discussed issues associated with parking for Porto's Bakery at Hollywood Way and Magnolia Boulevard. This very successful business has caused parking issues in the neighborhood. The Traffic and Transportation Committee requested that staff provide information on several alternative parking options for the area.

DISCUSSION:

Porto's Bakery currently provides a total of 51 private parking spaces for their customers. Additionally, they provide a parking control person to guide patrons into appropriate parking locations and they have installed signs notifying patrons not to park in unauthorized locations.

Traffic and Transportation Committee discussed the Porto's parking issues at the December 13, 2007 meeting and requested the following information:

- Costs associated with expanding the existing off-street parking
- Review the existing parking to identify any improvements
- Update on the DWP parking facility
- Analysis of costs for a multi-level garage
- Costs to purchase the building at 920 North Hollywood Way
- Provide signage for the Cordova neighborhood

Parking Expansion Costs – The existing parking arrangement is illustrated in Attachment 1. Porto's has 51 private parking spaces for their facility, and the City of Burbank has an additional 42 parking spaces as public parking supply. However, the public parking supply is largely used by employees of the area who have parking permits for the public parking. Almost all the public parking is allocated to employee parking.

The Burbank Redevelopment Agency plans to add parking supply to the area beneath existing DWP electrical power lines near Kenwood Street. A total of 50 additional spaces are proposed. This proposal is in the planning and design phase with no definitive implementation date. When implemented, the additional parking can relocate some of the permanent employee parking on Hollywood way.

Expansion of Existing Supply – If the parking system were expanded to incorporate the public parking north of 920 Hollywood Way, about 5 additional parking spaces could be accommodated in the existing land area. The cost of modifying the parking area to accommodate the additional spaces would be very low, about \$10,000 to \$15,000. However, the current permit parking system would be difficult to manage since it would be incorporated into the total parking lot. Implementation of the more remote facilities under

TRAFFIC AND TRANSPORTATION COMMITTEE REPORT

February 14, 2008

the DWP power lines and relocation of the permit parking would be significantly easier to manage. The 5 additional parking spaces would cost \$2,000 per space. The parking design is shown in Attachment 2.

Purchase of 920 Hollywood Way – If the single story building at 920 Hollywood Way were purchased and the southern parking are incorporated into the parking system, a total of 92 parking spaces could be provided in the main parking area, 12 more than the current parking system.

The parking expansion will require the purchase of 920 Hollywood Way, at an estimated cost of \$280,000 for the land and building and about \$90,000 for demolition and paving. The total cost per new space would be \$30,800 per new space. The parking arrangement is shown in Attachment 3.

Parking Structure Costs – A sloping floor garage structure could be constructed on site to provide additional parking. A second floor would cost an estimated \$1.6 million and the land would cost \$370,000. The additional parking above the existing 80 parking spaces would cost about \$20,000 per parking space and provide a total of 180 parking spaces. An underground parking structure would cost significantly more than the above ground facility. The underground garage is estimated to cost about \$2.4 million (\$24,000 per parking space).

Magnolia Blvd.

Porto's 3614	3612	3606	3520	3515	3512
-----------------	------	------	------	------	------

Hollywood Way

Parking	Parking	Parking
Parking	931	930
Parking	929 927	926
Parking	925A 925B 923	922
920	921B 921A	920
Parking	915	914
914	911	
912	909 907 907	
904	905	
898	853	
850	851	
848		
844		

Cordova Street

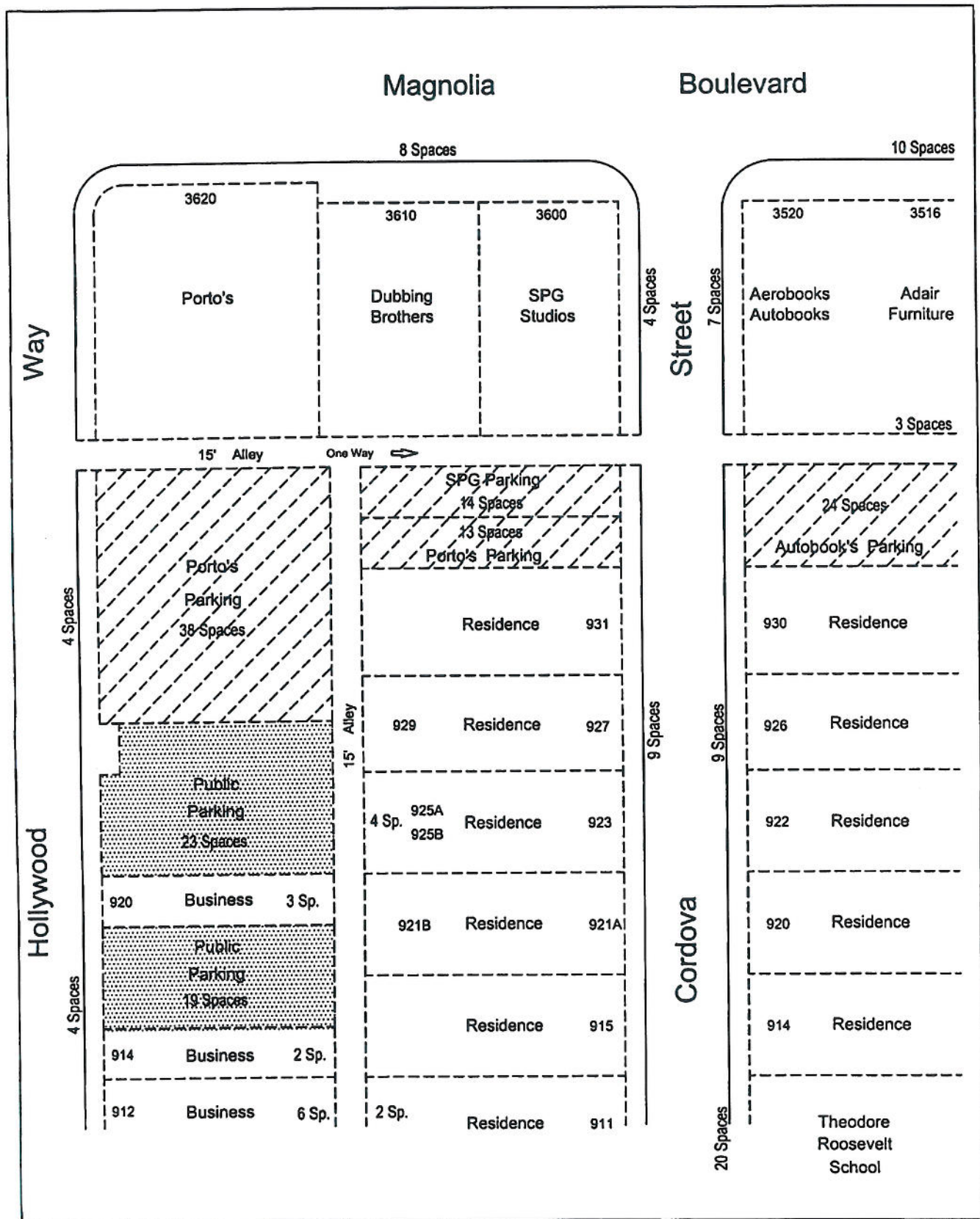
THEO. ROOSEVELT SCHOOL



Petitioning Residents

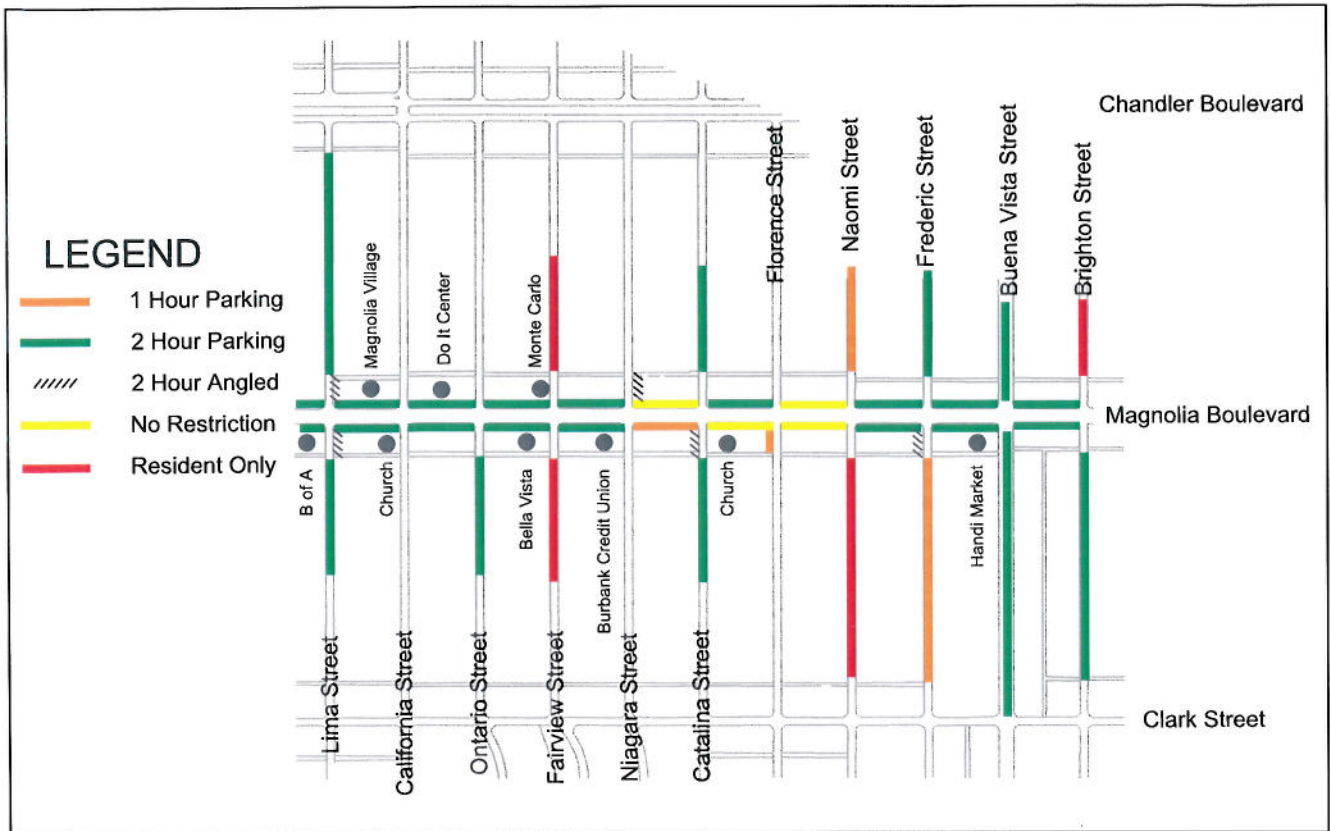


Attachment 2 Existing Land Use

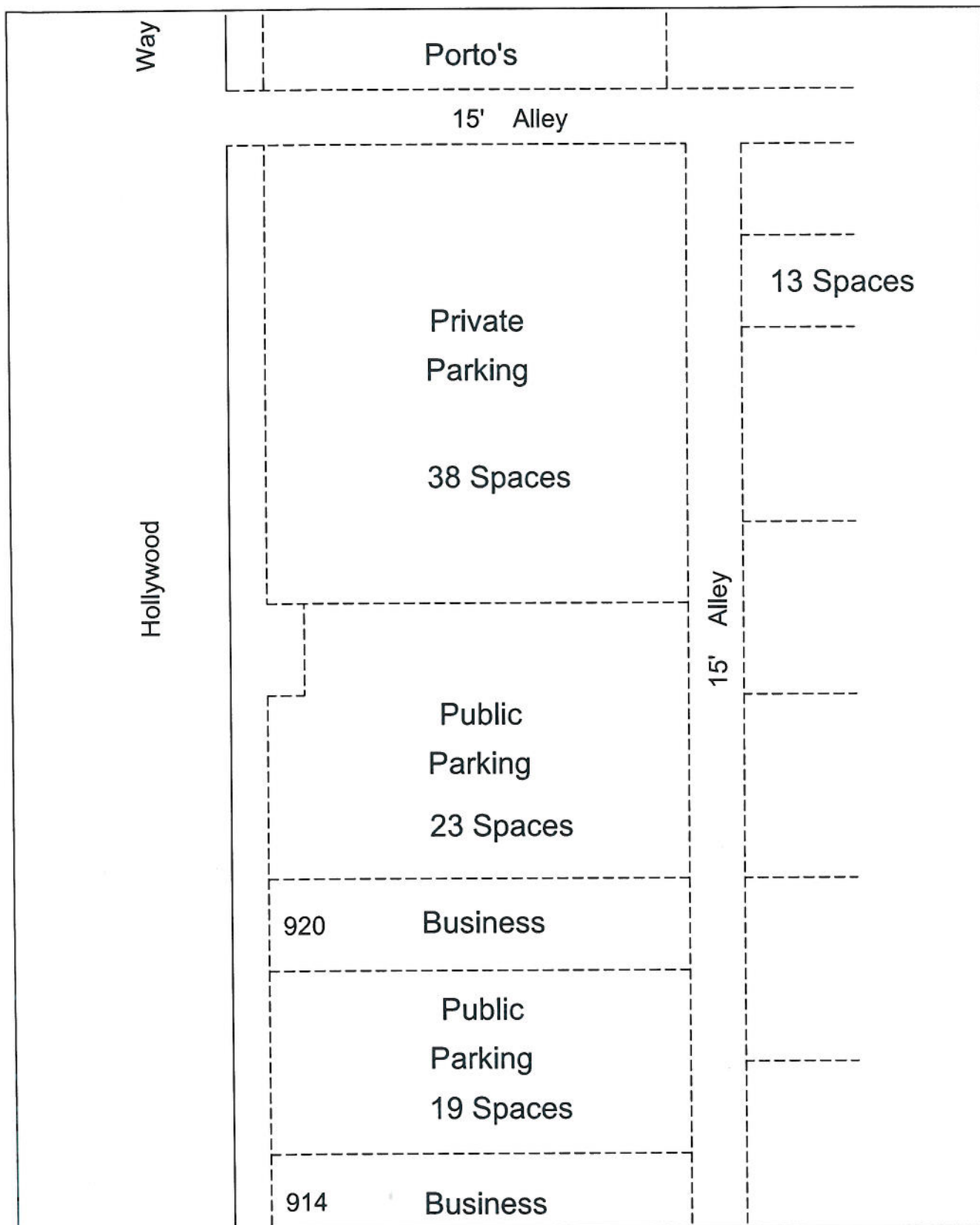


Existing Parking Supply





Magnolia Boulevard Parking



Existing Off Street Parking



TRAFFIC COMMISSION REPORT

January 27, 2011

Item VE

TRAFFIC SIGNAL TIMING

ISSUE:

The Traffic Commission requested information on the traffic signal timing at four intersections near Empire Shopping Center and at First Street / Olive Avenue. The timing sheets for those intersections are attached.

BACKGROUND:

At the November meeting, the Traffic Commission wished to discuss the timing at five signalized intersections. The timing at these locations varies from 90 seconds to 106 seconds depending on the time of day. These data are included on the attached timing sheets. Included as Attachment 2 is a recent memorandum given to City Council on the traffic signal timing and operation near shopping centers.

RECOMMENDATIONS:

Receive and File

ATTACHMENTS:

1. Traffic Signal Timing Sheets for five Intersections
2. Playlist Item 1295 – Traffic Signal Timing
3. Signal Operations – Minimum Bicycle Timing Information

CITY OF BURBANK
PUBLIC WORKS DEPARTMENT
Traffic Engineering Division

TRAFFIC SIGNAL
Coordination Timing

168 First St & Olive Ave			
Prepared by:	STEPHEN DOMENICO	Date	03/25/09
Checked by:	BENJAMIN KIM	Date	

Add PED Offset Interrupter Circuit.

	PLAN NUMBER									
	1	2	3	4	5	6	7	8	9	
0 CYCLE	90	90	90	0	0	0	0	0	0	
1 FORCE 1	15	15	15	0	0	0	0	0	0	
2 FORCE 2	47	47	47	0	0	0	0	0	0	
3 FORCE 3	72	72	72	0	0	0	0	0	0	
4 FORCE 4	0	0	0	0	0	0	0	0	0	
5 FORCE 5	47	47	47	0	0	0	0	0	0	
6 FORCE 6	32	32	32	0	0	0	0	0	0	
7 FORCE 7	64	64	64	0	0	0	0	0	0	
8 FORCE 8	0	0	0	0	0	0	0	0	0	
9 RING OFFSET	0	0	0	0	0	0	0	0	0	
A OFFSET 1	34	34	69	0	0	0	0	0	0	
B OFFSET 2	0	0	0	0	0	0	0	0	0	
C OFFSET 3	0	0	0	0	0	0	0	0	0	
D END PERM 1	15	15	15	0	0	0	0	0	0	
E HOLD RELEASE	255	255	255	0	0	0	0	0	0	
F ZONE OFFSET	0	0	0	0	0	0	0	0	0	

< C + 0 + C = 1 >

	COLUMN E								COLUMN F								COLUMN 2	TRANSITION TYPE:
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	Coord Min.	< C/5 + 1 + 9 > =
0									0	LAG FREE	2	4	6	8			1.2	< C/5 + 1 + 9 > =
1	1	1	1	1	1	1	1	1	1	LAG PLAN	2	4	6	8			0.X = SHORTWAY	
2	2	2	2	2	2	2	2	2	2	LAG PLAN	2	4	6	8			1.X = DWELL	
3	3	3	3	3	3	3	3	3	3	LAG PLAN	2	4	6	8			X.1 THRU X.4 = NUMBER OF CYCLES	
4	4	4	4	4	4	4	4	4	4	LAG PLAN	2	4	6	8			WHEN LENGTHENING	
5	5	5	5	5	5	5	5	5	5	LAG PLAN	2	4	6	8			LAG HOLD PHASES:	
6	6	6	6	6	6	6	6	6	6	LAG PLAN	2	4	6	8			< C/5 + 1 + A > =	
7	7	7	7	7	7	7	7	7	7	LAG PLAN	2	4	6	8			7-WIRE SYNC TIME:	
8	8	8	8	8	8	8	8	8	8	LAG PLAN	2	4	6	8			< C/5 + 1 + C > =	
9	9	9	9	9	9	9	9	9	9	LAG PLAN	2	4	6	8			Low Priority Channel:	
A	A	A	A	A	A	A	A	A	A	EXT. LAG	2	4	6	8			< E/125 + C + 8 > :	
B	B	B	B	B	B	B	B	B	B								1 - Channel A	
C	C	C	C	C	C	C	C	C	C								2 - Channel B	
D	D	D	D	D	D	D	D	D	D								3 - Channel C	
E	E	E	E	E	E	E	E	E	E								4 - Channel D	
F	F	F	F	F	F	F	F	F	F									

DIAL UP "stand alone"
MODEM INTERFACE.

NOTE: If "Non-Zero" parity
will be DISABLED for "Smart
Modem" Operation.

< C + 0 + C = 5 >

COORDINATION EXTRA:
1. Programmed Walk Time
for SYNC Phases

Plan # -->	1	2	3	4	5	6	7	8	9	0
0 PED ADJUST	5	5	5	0	0	0	0	0	0	0
1 STRT PERM 2	0	0	0	0	0	0	0	0	0	0
2 END PERM 2	0	0	0	0	0	0	0	0	0	0
3 STRT PERM 3	0	0	0	0	0	0	0	0	0	0
4 END PERM 3	0	0	0	0	0	0	0	0	0	0
5 RESERVE TIME	0	0	0	0	0	0	0	0	0	0
6 RESERVE PH	1	2	3	4	5	6	7	8	9	0
7	1	2	3	4	5	6	7	8	9	0
8	1	2	3	4	5	6	7	8	9	0
9 MAX RECALL	1	2	3	4	5	6	7	8	9	0
A PERM 1 VEH	1	2	3	4	5	6	7	8	9	0
B PERM 1 PED	1	2	3	4	5	6	7	8	9	0
C PERM 2 VEH	1	2	3	4	5	6	7	8	9	0
D PERM 2 PED	1	2	3	4	5	6	7	8	9	0
E PERM 3 VEH	1	2	3	4	5	6	7	8	9	0
F PERM 3 PED	1	2	3	4	5	6	7	8	9	0

COORDINATION PAGE 2 < C + 0 + C = 2 >

Advance Warning Beacon - Sign 1	
Time Before Yellow <F/1+C+E>	0.0
Phase Number <F/1+C+F>	0
Advance Warning Beacon - Sign 2	
Time Before Yellow <F/1+D+E>	0.0
Phase Number <F/1+D+F>	0
Min Green Before PE Force Off	
Min Time, sec. <F/1+0+8>	0
Max Preempt Time Before Failure	
Max Time, min. <F/1+0+9>	255
Min Time Bet Same Preempts (Does Not Apply To Railroad Preempt)	
Min Time, sec. <F/1+0+A>	0

TRAFFIC SIGNAL Phase Timing

CITY OF BURBANK
PUBLIC WORKS DEPARTMENT
Traffic Engineering Division

Prepared by: STEPHEN DOMENICO	Date 02/09/09
Checked by: BENJAMIN KIM	Date 02/10/09
Approved by: KEN JOHNSON	Date 7/12/03
Completed by:	Date 7/17/09

NOTES:

280 Empire & Lincoln

(Intersection Name)

Interval	1	2	3	4	5	6	7	8
0 WALK	0	7	0	7	0	7	0	7
1 DON'T WALK	0	16	0	18	0	16	0	16
2 MIN INITIAL	4	10	0	4	4	10	0	4
3 TYPE 3 LIMIT	0	20	0	0	0	20	0	0
4 ADD PER VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 VEH EXT	2.0	4.0	0.0	3.0	2.0	4.0	0.0	3.0
6 MAX GAP	2.0	6.0	0.0	3.0	2.0	6.0	0.0	3.0
7 MIN GAP	2.0	2.0	0.0	3.0	2.0	2.0	0.0	3.0
8 MAX LIMIT	2.5	4.0	0	3.5	2.5	4.0	0	3.5
9 MAXIMUM 2	2.5	4.0	0	3.5	2.5	4.0	0	3.5
A ADV/DLY WLK	0	0	0	0	0	0	0	0
B MIN PED CLR	0	0	0	0	0	0	0	0
C COND SRV MIN	0	0	0	0	0	0	0	0
D REDUCE EVERY	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
E YELLOW	3.5	4.0	0.0	3.5	3.5	4.0	0.0	3.5
F RED CLEAR	1.0	2.0	0.0	1.0	1.0	2.0	0.0	1.0

PHASE BANK 1 < C + 0 + F = 1 >

MANUAL PLAN SELECT:

(C/O + A + 1) = 0

AUTO = 0

PLAN = 1 - 9

FLASH = 15

MANUAL OFFSET SELECT:

(C/O + B + 1) = 0

AUTO = 0

OFFSET A = 1

OFFSET C = 3

AREA ADDRESS:

(C/O + 0 + 3) = 180

COMM ADDRESS:

(C/O + 0 + 0) = 9

ZONE NUMBER:

(C/O + 0 + 1) = 1

AREA NUMBER:

(C/O + 0 + 2) = 2

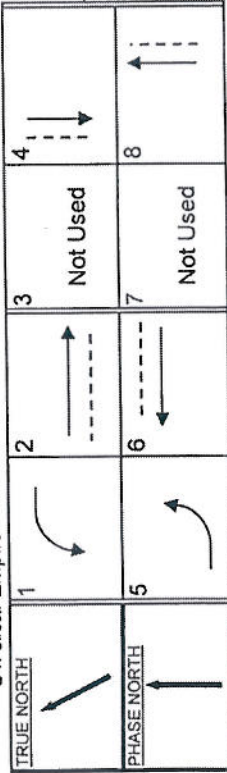
AREA ADDRESS:

(C/O + 0 + 3) = 180

PHASE DIAGRAM

E-W Street: Empire Ave

N-S Street: Lincoln Street



INPUT KEYSTROKES:

1) Set PAGE to required BANK #

< C+0+PAGE = BANK # >

2) Key stroke: PAGE + COLUMN + ROW

EXCL. PED. OPERATION:

WALK:

(F/1+0+0) = 0

DONT WALK:

(F/1+0+1) = 0

RED CLEAR:

(F/1+0+2) = 0.0

6 = International Ped.

7 = Clear Outputs During Flash

8 = Split Ring Operation

IC SELECT

2 = 2 Way Modem

3 = 7 Wire Slave

4 = Flash/Free

5 = Simplex Master

7 = 7 Wire Master

8 = Offset Interruptor

ALTERNATE TIMING	PREEMPT	PHASE FUNCTION FLAGS	SPECIALS	Controller Intervals
9 A B C D	E	Column F	Column F	
Ph. 1	0	0 PERMIT	0 FAST GRN FLH	0 = Walk
Ph. 2	0	1 RED LOCK	1 GREEN FLH	1 = FOW
Ph. 3	0	2 YELLOW LOCK	2 FLASH WALK	2 = MIN. Green
Ph. 4	0	3 VEH MIN CALL	3 GUAR PASS	3 =
Ph. 5	0	4 PED RECALL	4 SIMUL GAP	4 = Var. Initial
Ph. 6	0	5 PEDESTRIANS	5 SEQ TIMING	5 = Extension
Ph. 7	0	6 REST IN WALK	6 ADV WALK	6 =
Ph. 8	0	7 RED REST	7 DELAY WALK	7 = Reduce Gap
Ph. 9	0	8 DOUBLE ENTRY	8 EXT RECALL	8 = Red Rest
Ph. 10	0	9 VEH MAX CALL	9	9 = Preempt
Ph. 11	0	A SOFT RECALL	A MAX EXTEN	A = Stop Time
Ph. 12	0	B MAXIMUM 2	B INH PED RSRV	B = Red Revert
Ph. 13	0	C COND SERVICE	C SEMI ACTUA.	C = Gap Term.
Ph. 14	0	D MAN CONT CALL	D OLAP STRT UP	D = MAX Term.
Ph. 15	0	E YELLOW START	E STRT VEH CALL	E = Forceoff
Ph. 16	0	F FIRST PHASES	F STRT PED CALL	F = Red Clear.
Ph. 17	0			
Ph. 18	0			
Ph. 19	0			
Ph. 20	0			
Ph. 21	0			
Ph. 22	0			
Ph. 23	0			
Ph. 24	0			
Ph. 25	0			
Ph. 26	0			
Ph. 27	0			
Ph. 28	0			
Ph. 29	0			
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Ph. 88	0			
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Ph. 90	0			
Ph. 91	0			
Ph. 92	0			
Ph. 93	0			
Ph. 94	0			
Ph. 95	0			
Ph. 96	0			
Ph. 97	0			
Ph. 98	0			
Ph. 99	0			
Ph. 100	0			

< C + 0 + F = 1 >

Specials < C + 0 + F = 2 >

To Enable "E" Page, Set < F/1 + 9 + E = Not Zero >

CONTROLLER CONFIGURATION FLAGS

Column F

0 EXCLUSIVE

1 RR 1 CLEAR

2 RR 2 CLEAR

3 RR 2 LTD SRV

4 PROT/PERM

5 FLH TO PREMIT

6 FLASH ENTRY

7 DSABL MIN YEL

8 DSABL OVP YEL

9 OVP FLH YEL

A EM. VEH. A

B EM. VEH. B

C EM. VEH. C

D EM. VEH. D

E EXTRA 1

F IC SELECT

< C + 0 + E = 125 >

EXTRA 2

0 EXT PERMIT 1

1 EXT PERMIT 2

2 EXCLU PED

3 PED 2 P OUT

4 PED 6 P OUT

5 PED 4 P OUT

6 PED 8 P OUT

7 FLH YELLOW

A

B

C

D

E RESTRICTED

F EXTRA 2

< C + 0 + E = 125 >

EXTRA 2

1 = AWB On

2 = LMU

3 = EV A

4 = EV B

5 = EV C

6 = EV D

7 = RR 1

8 = SE 1

9 = SE 2

Page 1 of 6

CITY OF BURBANK
PUBLIC WORKS DEPARTMENT
 Traffic Engineering Division

TRAFFIC SIGNAL
Coordination Timing

280 Empire & Lincoln

Prepared by:	STEPHEN DOMENICO	Date	02/09/09
Checked by:	BENJAMIN KIM	Date	02/12/09

	1	2	3	4	5	6	7	8	9
0 CYCLE	90	90	90	0	0	0	0	0	0
1 FORCE 1	60	60	60	0	0	0	0	0	0
2 FORCE 2	0	0	0	0	0	0	0	0	0
3 FORCE 3	0	0	0	0	0	0	0	0	0
4 FORCE 4	35	35	35	0	0	0	0	0	0
5 FORCE 5	50	50	50	0	0	0	0	0	0
6 FORCE 6	0	0	0	0	0	0	0	0	0
7 FORCE 7	0	0	0	0	0	0	0	0	0
8 FORCE 8	35	35	35	0	0	0	0	0	0
9 RING OFFSET	0	0	0	0	0	0	0	0	0
A OFFSET 1	0	0	0	0	0	0	0	0	0
B OFFSET 2	0	0	0	0	0	0	0	0	0
C OFFSET 3	0	0	0	0	0	0	0	0	0
D END PERM 1	15	15	15	0	0	0	0	0	0
E HOLD RELEASE	255	255	255	0	0	0	0	0	0
F ZONE OFFSET	0	0	0	0	0	0	0	0	0

< C + 0 + C = 1 >

	1	2	3	4	5	6	7	8	9
0 LAG FREE	0	0	0	0	0	0	0	0	0
1 LAG PLAN	1	1	1	1	1	1	1	1	1
2 LAG PLAN	2	2	2	2	2	2	2	2	2
3 LAG PLAN	3	3	3	3	3	3	3	3	3
4 LAG PLAN	4	4	4	4	4	4	4	4	4
5 LAG PLAN	5	5	5	5	5	5	5	5	5
6 LAG PLAN	6	6	6	6	6	6	6	6	6
7 LAG PLAN	7	7	7	7	7	7	7	7	7
8 LAG PLAN	8	8	8	8	8	8	8	8	8
9 LAG PLAN	9	9	9	9	9	9	9	9	9
A NEMA SYN	A	A	A	A	A	A	A	A	A
B NEMA HOU	B	B	B	B	B	B	B	B	B
C	C	C	C	C	C	C	C	C	C
D	D	D	D	D	D	D	D	D	D
E COORD EX	E	E	E	E	E	E	E	E	E
F	F	F	F	F	F	F	F	F	F

COORDINATION EXTRA:

1. Programmed Walk Time

for SYNC Phases

< C + 0 + C = 1 >

COLUMN 2
Coord Min.

1	10
2	20
3	0
4	10
5	10
6	20
7	0
8	10

LAG HOLD PHASES:

< C/5 + 1 + A > =

7-WIRE SYNC TIME:

< C/5 + 1 + C > =

Low Priority Channel:

< E/125 + C + 8 > :

1 - Channel A

2 - Channel B

3 - Channel C

4 - Channel D

DIAL UP "stand alone"

MODEM INTERFACE.

NOTE: If "Non-Zero," parity

will be DISABLED for "Smart

Modem" Operation.

< C/5 + D + 0 > =

TRANSITION TYPE:

< C/5 + 1 + 9 > = 0.3

0.X = SHORTWAY

1.X = DWELL

X.1 THRU X.4 = NUMBER OF CYCLES

WHEN LENGTHENING

Daylight Savings Time

Begin Month < C/5 + 2 + A > 0

Begin Week < C/5 + 2 + B > 0

End Month < C/5 + 2 + C > 0

End Week < C/5 + 2 + D > 0

Advance Warning Beacon - Sign 1

Time Before Yellow < F/1 + C + E > 0.0

Phase Number < F/1 + C + F > 0

Advance Warning Beacon - Sign 2

Time Before Yellow < F/1 + D + E > 0.0

Phase Number < F/1 + D + F > 0

Min Green Before PE Force Off

Min Time, sec. < F/1 + 0 + 8 > 0

Max Preempt Time Before Failure

Max Time, min. < F/1 + 0 + 9 > 255

Min Time Bet Same Preempts

(Does Not Apply To Railroad Preempt)

Min Time, sec. < F/1 + 0 + A > 0

Plan # -->	1	2	3	4	5	6	7	8	9
0 PED ADJUST	0	0	0	0	0	0	0	0	0
1 STRT PERM 2	0	0	0	0	0	0	0	0	0
2 END PERM 2	0	0	0	0	0	0	0	0	0
3 STRT PERM 3	0	0	0	0	0	0	0	0	0
4 END PERM 3	0	0	0	0	0	0	0	0	0
5 RESERVE TIME	0	0	0	0	0	0	0	0	0
6 RESERVE PH	1	2	3	4	5	6	7	8	9
7	1	2	3	4	5	6	7	8	9
8 PRETIMED	1	2	3	4	5	6	7	8	9
9 MAX RECALL	1	2	3	4	5	6	7	8	9
A PERM 1 VEB	1	2	3	4	5	6	7	8	9
B PERM 1 PED	1	2	3	4	5	6	7	8	9
C PERM 2 VEB	1	2	3	4	5	6	7	8	9
D PERM 2 PED	1	2	3	4	5	6	7	8	9
E PERM 3 VEB	1	2	3	4	5	6	7	8	9
F PERM 3 PED	1	2	3	4	5	6	7	8	9

COORDINATION PAGE 2 < C + 0 + C = 2 >

CITY OF BURBANK
PUBLIC WORKS DEPARTMENT
Traffic Engineering Division

TRAFFIC SIGNAL
Coordination Timing

279 Empire Ave & Victory PI

Prepared by: STEPHEN DOMENICO Date 02/09/09
Checked by: BENJAMIN KIM Date 02/12/09

	PLAN NUMBER								
	1	2	3	4	5	6	7	8	9
0 CYCLE	90	90	90	0	0	0	0	0	0
1 FORCE 1	55	55	55	0	0	0	0	0	0
2 FORCE 2	0	0	0	0	0	0	0	0	0
3 FORCE 3	0	0	0	0	0	0	0	0	0
4 FORCE 4	0	0	0	0	0	0	0	0	0
5 FORCE 5	0	0	0	0	0	0	0	0	0
6 FORCE 6	0	0	0	0	0	0	0	0	0
7 FORCE 7	0	0	0	0	0	0	0	0	0
8 FORCE 8	35	35	35	0	0	0	0	0	0
9 RING OFFSET	0	0	0	0	0	0	0	0	0
A OFFSET 1	0	0	0	0	0	0	0	0	0
B OFFSET 2	0	0	0	0	0	0	0	0	0
C OFFSET 3	0	0	0	0	0	0	0	0	0
D END PERM 1	15	15	15	0	0	0	0	0	0
E HOLD RELEASE	255	255	255	0	0	0	0	0	0
F ZONE OFFSET	0	0	0	0	0	0	0	0	0

< C + 0 + C = 1 >

	COLUMN E								COLUMN F							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
0	1 SYNC Plan	2	3	4	5	6	7	8	0 LAG FREE	1	2	3	4	5	6	8
1	2 SYNC Plan	3	4	5	6	7	8	1 LAG PLAN	2	3	4	5	6	7	8	8
2	3 SYNC Plan	4	5	6	7	8	2 LAG PLAN	3 LAG PLAN	4	5	6	7	8	8	8	8
3	4 SYNC Plan	5	6	7	8	3 LAG PLAN	4 LAG PLAN	5 LAG PLAN	6	7	8	8	8	8	8	8
4	5 SYNC Plan	6	7	8	4 LAG PLAN	6 LAG PLAN	7 LAG PLAN	8 LAG PLAN	9	A	B	C	D	E	F	
5	6 SYNC Plan	7	8	5 LAG PLAN	7 LAG PLAN	8 LAG PLAN	A EXT. LAG									
6	7 SYNC Plan	8	6 LAG PLAN	8 LAG PLAN												
7	8 SYNC Plan	9	7 LAG PLAN													
8	9 SYNC Plan	A	8 LAG PLAN													
9	A NEMA SYN	B	9 LAG PLAN													
A	B NEMA HOL	C														
B	C	D														
C	D	E														
D	E	F														
E	F															
F																

COORDINATION EXTRA:

1- Programmed Walk Time

for SYNC Phases

< C + 0 + C = 1 >

COLUMN 2		TRANSITION TYPE:	
Coord Min.	< C/5 + 1 + 9 > =	0.3	
1	10	0 X = SHORTWAY	
2	20	1 X = DWELL	
3	0	X.1 THRU X.4 = NUMBER OF CYCLES WHEN LENGTHENING	
4	0	LAG HOLD PHASES:	
5	0	< C/5 + 1 + A > =	
6	20	7-WIRE SYNC TIME:	
7	0	< C/5 + 1 + C > =	
8	20	Low Priority Channel:	
		< E/125 + C + 8 > :	
		1 - Channel A	
		2 - Channel B	
		3 - Channel C	
		4 - Channel D	

DIAL UP "stand alone"

MODEM INTERFACE.

NOTE: If "Non-Zero" parity will be DISABLED for "Smart Modem" Operation.

< C + 0 + C = 5 >

Daylight Savings Time

Begin Month < C/5 + 2 + A >

Begin Week < C/5 + 2 + B >

End Month < C/5 + 2 + C >

End Week < C/5 + 2 + D >

Advance Warning Beacon - Sign 1

Time Before Yellow < F/1 + C + E >

Phase Number < F/1 + C + F >

Advance Warning Beacon - Sign 2

Time Before Yellow < F/1 + D + E >

Phase Number < F/1 + D + F >

Min Green Before PE Force Off

Min Time, sec. < F/1 + 0 + 8 >

Max Preempt Time Before Failure

Max Time, min. < F/1 + 0 + 9 >

Min Time Bet Same Preempts

(Does Not Apply To Railroad Preempt)

Min Time, sec. < F/1 + 0 + A >

Plan # -->	< C + 0 + C = 1 >									< C + 0 + C = 2 >								
	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
0 PED ADJUST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 STRT PERM 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 END PERM 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 STRT PERM 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 END PERM 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 RESERVE TIME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 RESERVE PH	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
7 PRETIMED	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
8 MAX RECALL	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
9 PERM 1 VEB	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
A PERM 1 PED	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
B PERM 2 VEB	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
C PERM 2 PED	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
D PERM 3 VEB	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
E PERM 3 PED	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
F	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9

COORDINATION PAGE 2 < C + 0 + C = 2 >

**CITY OF BURBANK
PUBLIC WORKS DEPARTMENT
MEMORANDUM**

DATE: December 2, 2010

TO: Michael Flad, City Manager

FROM: Bonnie Teaford, Public Works Director
By: Kenneth Johnson, Traffic Engineer

SUBJECT: PLAYLIST ITEM NO. 1295- Traffic Signal Operation Near Shopping Centers During the Holiday Period

City Council requested information on traffic signal operation during the holiday period.

DISCUSSION:

Shopping center trip generation can average 25 to 40 percent higher during the holiday season than during an average weekday, and peak demand can be as much as three times normal¹. The holiday traffic demand on roadways adjacent to shopping areas requires a highly flexible traffic control system, and our fully actuated system is very flexible. During the holiday period, staff monitors the signal timing of critical intersections and makes adjustments as necessary to maintain optimum operation.

Burbank has two major shopping areas, the Empire Center including COSTCO and the Media Center Mall with IKEA. The most heavily impacted intersections during the holidays are Five Points (Burbank Boulevard / Victory Boulevard), Burbank Boulevard / San Fernando Boulevard, and to a lesser extent Buena Vista Street / San Fernando Boulevard. The adjacent traffic signals in these commercial areas are coordinated with a common signal cycle length so that the intersections operate in unison.

The coordinated traffic signal systems adjacent to our shopping centers are illustrated in Attachment 1. Staff initially tried to coordinate all signals in one system, but the Five Points signal prevented effective coordination during the peak travel hours. Staff determined that three separate interconnected systems would operate most efficiently with the varied traffic demand in the system. All the traffic signals are fully actuated which allows variable green times on each approach. Green signal time for the through movements generally vary between a minimum of 10 seconds to a maximum of about 50 seconds, depending on the approach, and left turn green time varies between 4 seconds and about 25 seconds. Green signal time within the minimum and maximum time limits will vary based on the actual traffic demand at that time. Coordination between signals is achieved by terminating side street green at the proper time to coordinate the start of main street green at each signal.

¹ Trip Generation, 7th Edition, Institute of Transportation Engineers, 2003
C:\Documents and Settings\KJohnson\Desktop\No 1295 Traffic Signal Operation During Holidays.docx

The three signals adjacent to Five Points are driven by the Five Points signal, so that the entire signal cluster is coordinated with the variable operation of the Five Points signal. The Five Points signal cycle length varies between 90 seconds and 250 seconds, depending on the traffic demand at the intersection. The two minor traffic signals that serve COSTCO (at Lake Street and at the COSTCO driveway) operate at a double cycle when the Five Points signal has a long signal cycle length. That is, these signals cycle through twice for every one Five Points signal cycle.

The seven signal cluster adjacent to the primary traffic signal at San Fernando Boulevard and Burbank Boulevard similarly are coordinated with the primary signal at this main intersection. Cycle length varies between 90 seconds and 180 seconds based on traffic demand at the main San Fernando Boulevard / Burbank Boulevard intersection. Minimum and maximum green times are similar to those at the Five Points intersections.

The six traffic signals on Empire Avenue and Victory Place are coordinated with the traffic signals on Buena Vista Street and the cycle length of these signals is driven by the signal at Buena Vista Street and Empire Avenue. Actuated minimum and maximum green times are similar to those of the other traffic signal clusters, and the cycle lengths vary between 90 seconds and 106 seconds.

The above three signal clusters and their timing parameters were identified from observation of the traffic demand and the testing of various operational scenarios. The current operation provides the best signal coordination for the area with the highest degree of flexibility to account for the variable traffic demand. These operational systems provide the best service year round.

When defining the three coordinated systems, staff had to acknowledge three major operational constraints at the critical intersections.

Coordination - The signal coordination could not be extended across the Burbank Boulevard Bridge because coordination resulted in extensive traffic backup on the southbound I-5 off ramp and the northbound I-5 right turn off ramp when the Five Points signal operated at a long signal cycle. The two systems at either end of the bridge had such different demand characteristics that it is impossible to coordinate the entire group without impacting the freeway. Staff is currently evaluating the possibility of coordinating the two clusters during off peak time periods to smooth the traffic flow across the bridge. Off peak coordination should not cause freeway backups and it will move traffic more efficiently.

The Empire Avenue cluster of signals has a much more normal demand distribution so that it operates much better as a coordinated separate signal cluster. Staff has had to adjust timing on some Empire Avenue signals during the holiday season to provide more exiting green signal time, and these signals operate with minimal congestion.

Five Points - The most congested intersection in Burbank is the Five Points intersection. It reaches capacity periodically throughout the year. The trigger for the at-capacity operation is the entrance to COSTCO from Victory Boulevard to the parking lot and to the gasoline station. This one lane entrance backs on to Victory Boulevard from de-parking and waiting vehicles on COSTCO property. The traffic stream over the Burbank Boulevard Bridge backs up and continuously activates the vehicle detectors in the roadway. That condition extends the Burbank green to maximum during every signal

cycle and shortens the green for other approaches. Additionally, the right turn lane becomes blocked so that vehicles cannot use Victory Place to access the secondary entrance to COSTCO. When the traffic signal operates at the maximum signal cycle and all approaches are full, no adjustment of the traffic signal timing will help the situation. This intersection was evaluated by Albert Grover and Associates, who came to the same conclusion that no improvement was possible during peak, at-capacity periods with existing demand.

Burbank Media Mall – The main 5,000 space garage is located between San Fernando Boulevard and First Street. Congestion in the garage as well as pedestrian activity across the private portion of San Fernando Boulevard backs traffic to north of the Burbank Boulevard intersection. Drivers desiring to visit the mall have no alternative route to the parking if they arrive by the freeway and Burbank Boulevard. Traffic at the Burbank Boulevard / San Fernando Boulevard intersection is prevented from clearing the intersection with the maximum amount of green time provided, but the signal cycle cannot be extended beyond 180 seconds because of the close proximity of the ramp signal, the First Street signal, and the signal at Walnut St. However, the duration of maximum congestion at this location is considerably shorter than at Five Points.

CONCLUSIONS:

Congestion cannot be reduced at the critical signalized intersections without increasing capacity or reducing demand. The proposed road improvement on the west corner of Burbank Boulevard and San Fernando Boulevard will improve the condition considerably at this location. Additional southbound lanes will be created and the intersection will be widened. Congestion will still occur from parking and pedestrian activities in the mall, but the impact will be decreased.

Construction of the Empire Avenue interchange will significantly improve the access to the Empire Center and provide a new access to COSTCO from the north. Additionally, the widening of the Burbank Boulevard Bridge with the I-5 widening project will enable extension of the westbound right turn lane to Victory Place which will unclog the right turning traffic. The widening will allow the installation of a separate right turn lane to facilitate access to the secondary entrance to COSTCO.

cc. Jacqui Batayneh
Krista Dietrich

Table 4D-109 (CA). Signal Operations - Minimum Bicycle Timing (English Units)

$$G_{min} + Y + R_{clear} \geq 6 \text{ sec} + (w+6 \text{ ft})/14.7 \text{ ft/sec, where}$$

G_{min} = Length of minimum green interval (sec)

Y = Length of yellow interval (sec)

R_{clear} = Length of red clearance interval (sec)

W = distance from limit line to far side of last conflicting lane (ft)

Distance from limit line to far side of last conflicting lane	Minimum phase length (minimum green plus yellow plus red clearance)
Feet	Seconds
40	9.1
50	9.8
60	10.5
70	11.2
80	11.9
90	12.5
100	13.2
110	13.9
120	14.6
130	15.3
140	15.9
150	16.6
160	17.3
170	18.0
180	18.7

TRAFFIC COMMISSION REPORT

January 27, 2011

Item VF

LNCV STATUS REPORT

ISSUE:

Traffic Commission requested that staff provide monthly updates on the large Non-Commercial Vehicle (LNCV) parking permit development process.

DISCUSSION:

Advance signs at all gateways to the City have been installed. The signs include the telephone number "(819)238-3837" and website for more information. Presently, during working hours all calls are transferred to Public Works office and after working hours and weekends, they are transferred to the Police Department. Also, Public Works has been issuing LNCV Permits at no cost

The LNCV permit development process is currently underway with Edgesoft, Inc. and IT staff. Public Works has weekly meetings scheduled for the next several months. The projected time frame for completion of the LNCV component is January 2011. The IT Department has informed Public Works that there are several issues that have been identified that will take some time to resolve so that everything works seamlessly and properly. The IT Department has informed us that the new estimated "go live" date is February 21, 2011.

Staff had also prepared an informational flyer on the new ordinance which was posted on the City's website and distributed for handout at City Hall, the Community Services Building, the two libraries, and City recreation centers. Copies of this flyer are also being distributed and placed on LNCVs by Burbank Police/Parking Enforcement Officers.

Public Works and Police Departments have been discussing the permit fee and fine, and the proposed amounts are tentatively scheduled to be presented to City Council, early spring 2011. The permit fee is anticipated to be \$5 and the fine \$50 per violation.

CONCLUSIONS:

The LNCV signs have been installed and permit documentation is proceeding on schedule. The permit fee and fine to be presented to City Council for their review and approval, in spring 2011.

TRAFFIC COMMISSION REPORT

January 27, 2011

Item VG

NEW 2010 California MUTCD STANDARDS

ISSUE:

The California Manual of Uniform Traffic Control Devices (California MUTCD) identifies standard design and operating requirements for all traffic control devices in California, including signs, pavement markings, traffic signals and work zone controls. The latest version of the California MUTCD contains some changes to previous standards that can have a significant impact on the control and management of traffic. This report outlines those changes.

BACKGROUND:

The California Manual on Uniform Traffic Control Devices (California MUTCD) is published by the State of California, Department of Transportation and is issued to adopt uniform standards and specifications for all official traffic control devices. The California MUTCD, California Sign Specifications and other publications and related current information is available on the Caltrans Internet website at: <http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/>

The California MUTCD is the standard for all official traffic control devices, under Section 11340.9(h) of California Government Code and Section 21400 of California Vehicle Code (CVC). In all cases involving new highway or bikeway construction or reconstruction, the traffic control devices installed (temporary or permanent) must be in conformance with the current edition of the California MUTCD before that highway is opened or re-opened to the public for unrestricted travel pursuant to the California Vehicle Code 21401.

The newest version of the California MUTCD is currently finishing public review prior to being formally adopted by the State, expected in early 2011. The document has ten sections covering signs, pavement markings, traffic signals, school area controls, rail grade crossing controls, and bicycle facilities. Substantive changes are included in sections covering signs, traffic signals, school area controls, and bicycle facilities. The various sections of the MUTCD are shown in Attachment 1.

DISCUSSION:

The following paragraphs summarize some of the more important changes to each of the 2010 MUTCD sections:

Signs – The most substantive change in sign standards is the standard use of symbols rather than word messages. Wherever possible, symbols replace old word message signs. The standards note that only word messages conforming to Department of

TRAFFIC COMMISSION REPORT

January 27, 2011

Transportation standards and specifications shall be placed on streets and highways (CVC Section 21401).

The new MUTCD regulates private advertising on any public highway (Business and Professions Code Section 5403a), which includes roads, streets, boulevards, lanes, courts, places, commons, ways, and other rights-of-way intended for public passage of vehicles and persons.

The standard signs to be used on public streets are shown in Attachment 2, and the standard colors of all signs are listed in Attachment 3. Signs now deleted in the MUTCD are shown in Attachment 4. These signs are generally replaced with symbol signs.

The legend on new MUTCD standardized Vehicle Speed Feedback Signs shall read "YOUR SPEED IS XX". These signs cannot be used as variable speed limit signs.

School Area Controls – Minor changes have been made to school area signage, and the current standards are shown in Attachment 5. School speed limit signage Assembly C (Speed Limit 25 MPH) shall be used on streets where speed limits are greater than 25 MPH that are contiguous to school grounds. The "WHEN FLASHING" and specific time period messages shall not be used in school areas in California since they are not supported by CVC 22352. "SCHOOL SPEED LIMIT 20 WHEN FLASHING" can no longer be used.

Pavement Markings – Pavement markings have not significantly changed in the new manual. Now included in the MUTCD are triangular yield line markings, various crosswalk markings and roundabout pavement markings. These installations are shown in Attachment 6.

Traffic Signal Operation – The most significant change in the MUTCD standards is in the realm of traffic signal operation. A number of new minimum requirements are established in the new manual. The changes involve pedestrian walking time, bicycle detection and intersection passage time.

Section 4D.105 discusses bicycle / motorcycle detection. The new standard requires that when more than 50 percent of all detection on an approach must be replaced, then all new detection must be sufficiently sensitive to detect a Referenced Bicycle Rider at a Limit Line Detection Zone. A Referenced Bicycle Rider is a minimum 4 ft tall person, weighing minimum 90 lb, riding on an unmodified minimum 16 in. wheel bicycle with non-ferromagnetic frame, non-ferromagnetic fork and cranks, aluminum rims, stainless steel spokes, and headlight.

In addition to the new bicycle detection, the traffic signal timing must be designed to accommodate the bicycle rider (Section 4D-109). As shown in Attachment 8, the minimum timing for green + yellow + all red timing must acknowledge the bicycle travel time.

TRAFFIC COMMISSION REPORT

January 27, 2011

Section 4E-10 discusses the walking time for pedestrians. The new manual identifies a standard walking time of four feet/second for pedestrian signal walking speed. The minimum pedestrian walk signal is recommended at 7 seconds, although a minimum of four seconds can be used where few pedestrians cross. The flashing hand signal (Don't Walk) is based on the four feet/second walking time across the traveled roadway, except where older or disabled pedestrians regularly use the crosswalk, where a 2.8 feet/second speed should be used.

CONCLUSIONS:

The new MUTCD has a number of requirements that have the potential to significantly alter the way traffic control systems operate. Changes related to bicycle detection and pedestrian walking speed at traffic signals have the greatest potential of changing the efficiency of traffic signal operation.

RECOMMENDATIONS:

Receive and File

ATTACHMENTS:

1. MUTCD Table of Contents
2. Standard Traffic Control Signs
3. Standard Sign Colors
4. Prohibited Signs
5. School Area Signage
6. New Pavement Markings
7. Traffic Signal Detection Systems
8. Minimum Bicycle Signal Timing

VG Attachment 1

Individual CA MUTCD Parts:	File Size:
Part 0: Cover, Introduction, and Table of Contents	3.25 MB
Part 1: General	1.83 MB
Part 2: Signs	71.92 MB
Part 3: Markings	31.62 MB
Part 4: Highway Traffic Signals	16.75 MB
Part 5: Traffic Control Devices for Low-Volume Roads	2.91 MB
Part 6: Temporary Traffic Control	33.33 MB
Part 7: Traffic Controls for School Areas	5.82 MB
Part 8: Traffic Controls for Highway-Rail Grade Crossings	6.75 MB
Part 9: Traffic Controls for Bicycle Facilities	8.48 MB
Part 10: Traffic Controls for Highway-Light Rail Transit Grade Crossings	4.86 MB
Appendix	1.33 MB

Attachment 1

**2010 MUTCD
Standard Signs**

California Sign Chart

Sheet 1 of 12 - Federal Regulatory Signs

California Department of Transportation
Signs and Work Zones Branch
January 2010



This chart contains commonly used signs in California, and is not meant to be used as a comprehensive sign chart.

California codes are designated by (CA). Otherwise Federal codes are shown. For a complete directory of signs, visit www.dot.ca.gov/hq/traffic/signtech/signindex.htm.



California Sign Chart



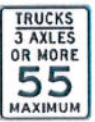






































































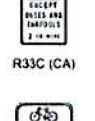
















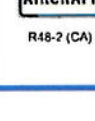
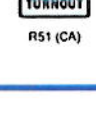
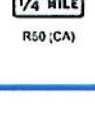
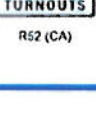
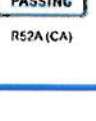

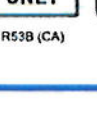
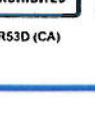
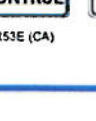
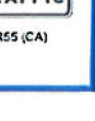
Sheet 2 of 12 - California Regulatory Signs

This chart contains commonly used signs in California, and is not meant to be used as a comprehensive sign chart.

California codes are designated by (CA). Otherwise Federal codes are shown. For a complete directory of signs, visit www.dot.ca.gov/hq/traffops/signtech/signel/index.htm.

California Department of Transportation
Signs and Work Zones Branch
January 2010



 R2-4 (CA)	 R3 (CA)	 R6-3 (CA)	 R6-3A (CA)	 R6-4 (CA)	 R6-4A (CA)	 R13A (CA)	 R13B (CA)	 R18A (CA)	 R18A (CA)
 R18B (CA)	 R20A (CA)	 R20D-1 (CA)	 R20D-3 (CA)	 R20D-4 (CA)	 R20H (CA)	 R20-1 (CA)	 R20-1A (CA)	 R21 (CA)	 R22 (CA)
 R23 (CA)	 R24 (CA)	 R24A (CA)	 R24B (CA)	 R24C (CA)	 R24D (CA)	 R24E (CA)	 R25 (CA)	 R25A (CA)	 R25B (CA)
 R25C (CA)	 R25D (CA)	 R25E (CA)	 R25F (CA)	 R25H (CA)	 R25J (CA)	 R26 (CA)	 R26A (CA)	 R26A(S) (CA)	 R26F (CA)
 R26K (CA)	 R26L (CA)	 R26(S) (CA)	 R27 (CA)	 R27A (CA)	 R28 (CA)	 R28(S) (CA)	 R28A (CA)	 R28A(S) (CA)	 R28C (CA)
 R28D (CA)	 R28D(S) (CA)	 R28E (CA)	 R28F (CA)	 R29 (CA)	 R30 (CA)	 R30A (CA)	 R30B (CA)	 R30C (CA)	 R30D (CA)
 R30E (CA)	 R30F (CA)	 R31 (CA)	 R31(S) (CA)	 R32 (CA)	 R32B (CA)	 R32C (CA)	 R32D (CA)	 R32E (CA)	 R32F (CA)
 R33 (CA)	 R33A (CA)	 R33B (CA)	 R33C (CA)	 R36 (CA)	 R37 (CA)	 R38 (CA)	 R38(S) (CA)	 R38A (CA)	 R39 (CA)
 R39-1 (CA)	 R39-2 (CA)	 R40 (CA)	 R44A (CA)	 R44B (CA)	 R44C (CA)	 R47 (CA)	 R47A (CA)	 R48 (CA)	 R48-1 (CA)
 R48-2 (CA)	 R51 (CA)	 R50 (CA)	 R52 (CA)	 R52A (CA)	 R53A (CA)	 R53B (CA)	 R53D (CA)	 R53E (CA)	 R55 (CA)

California Sign Chart







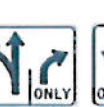





































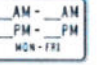









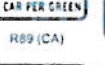






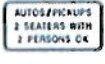



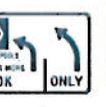


















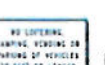















Sheet 3 of 12 - California Regulatory Signs

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California codes are designated by (CA). Otherwise Federal codes are shown. For a complete directory of signs, visit www.dot.ca.gov/hq/trafficops/signtech/signindex.htm.

California Department of Transportation
Signs and Work Zones Branch
January 2010



 R57 (CA)	 R58 (CA)	 R60B (CA)	 R61-1 (CA)	 R61-3 (CA)	 R61-5 (CA)	 R61-7 (CA)	 R61-9 (CA)	 R61-11 (CA)	 R61-13 (CA)
 R61-15 (CA)	 R61-17 (CA)	 R61-19 (CA)	 R61-22 (CA)	 R61-24 (CA)	 R61-26 (CA)	 R61-28 (CA)	 R61-30 (CA)	 R61-32 (CA)	 R61-34 (CA)
 R61-36 (CA)	 R62C (CA)	 R62E (CA)	 R70 (CA)	 R73-1 (CA)	 R73-2 (CA)	 R73-3 (CA)	 R73-4 (CA)	 R73-5 (CA)	 R73-6 (CA)
 R73-8 (CA)	 R73-9 (CA)	 R74 (CA)	 R75 (CA)	 R76 (CA)	 R76-1 (CA)	 R77 (CA)	 R78 (CA)	 R79 (CA)	 R80-1 (CA)
 R81 (CA)	 R81A (CA)	 R81B (CA)	 R82A (CA)	 R82B (CA)	 R82-1 (CA)	 R84-1 (CA)	 R84-2 (CA)	 R86 (CA)	 R86-2 (CA)
 R86-3 (CA)	 R87-1 (CA)	 R87-2 (CA)	 R88 (CA)	 R89 (CA)	 R89-2 (CA)	 R90-1 (CA)	 R91 (CA)	 R91-1 (CA)	 R91-2 (CA)
 R91-3 (CA)	 R91B (CA)	 R92 (CA)	 R93A (CA)	 R93-2 (CA)	 R94 (CA)	 R99 (CA)	 R99B (CA)	 R99C (CA)	 R100A (CA)
 R100B (CA)	 R101 (CA)	 R102 (CA)	 R102A (CA)	 R103 (CA)	 R103A (CA)	 R104 (CA)	 R104A (CA)	 R105 (CA)	 R105A (CA)
 S3-1 (CA)	 S8 (CA)	 S20 (CA)	 S21 (CA)	 S22 (CA)	 S22-1 (CA)	 S23 (CA)	 S24 (CA)	 S30-1 (CA)	 S30-2 (CA)
 S30-3 (CA)	 S30-4 (CA)	 S30-5 (CA)	 S33 (CA)	 S34 (CA)	 SR2 (CA)	 SR5-1 (CA)	 SR6-1 (CA)	 SR7-1 (CA)	 SR8-1 (CA)






California Sign Chart

Sheet 4 of 12 - California Regulatory Signs (Continued)

California Department of Transportation
Signs and Work Zones Branch
January 2010



This chart contains commonly used signs in California, and is not meant to be used as a comprehensive sign chart. California codes are designated by (CA). Otherwise Federal codes are shown. For a complete directory of signs, visit www.dot.ca.gov/hq/trafficops/signtech/signs/Index.htm.

LOADED SR9-1 (CA)	EMPTY 5 MPH SR11-1 (CA)	WARNING: ANY PERSON WHO REMOVES PROPERTY FROM THE PREMISES WITHOUT AUTHORITY IS GUILTY OF THEFT. STATE OF CALIFORNIA. P.C. SEC. 490 CALIFORNIA HIGHWAY PATROL. SR13-1 (CA)	 SR15 (CA)	SAFETY BELT LAW ENFORCED SR15A (CA)	TRUCKS NOT ALLOWED BYPASS SIGNAL MUST BE ON WHEN SCALE SR17 (CA)	NO EXPLOSIVES OR FLAMMABLES SR18 (CA)	EXPLOSIVES AND CORROSIVES PROHIBITED WITHOUT PERMIT SR19-1 (CA)	SNOW NOT REMOVED BEYOND HERE SR20-1 (CA)	
EMPTY SR10-1 (CA)	LOADED 3 MPH SR12-1 (CA)								
DUMPING PROHIBITED SR22-1 (CA)	NO HOUSEHOLD GARBAGE SR23-1 (CA)	TRANSPORTING ILLEGAL FIREWORKS PROHIBITED SR25 (CA)	DISPLAY OF VEHICLES FOR SALE PROHIBITED SR26 (CA)	ONE LANE BRIDGE FOR TRUCKS AND BUSES SR27-1	 SR39A (CA)	LEFT OR U TURN ON GREEN ARROW ONLY SR39A(U) (CA)	OVER 13'-6" WIDE SR40 (CA)	ALL BUSES STOP AT SCALES SR41 (CA)	ALL BUSES SR42 (CA)
GOLF CARTS OK DAYLIGHT HOURS SR43 (CA)	BUS AND TRUCK INTERSTATE EXPRESS MUST REGISTER WITH THE CALIFORNIA P.U.C. TEL (415) 753-8177 SR44 (CA)	EMERGENCY ACCESS KEEP CLEAR SR46 (CA)	OFF HIGHWAY VEHICLE COMBINED USE NEXT _____ MILES SR47 (CA)	 SR50-1 (CA)	 SR50-2 (CA)	SPECIAL DRIVING ZONE BEGINS HERE DOUBLE FINE ZONE SR53 (CA)	DOUBLE FINE ZONE SR54 (CA)	SPECIAL DRIVING ZONE ENDS HERE SR55 (CA)	 SR56 (CA)
ALL OTHERS ENTER AND LEAVE AT OWNERS RISK SR57 (CA)	RED LIGHT VIOLATION \$ _____ MINIMUM FINE SR58 (CA)	RIGHT LANE BUS LANE AHEAD SR60-1 (CA)	RIGHT LANE BUS LANE AHEAD ON 4TH ST. SR60-2 (CA)	RIGHT LANE BUSES TAXIS ONLY 6AM - 9PM MON - FRI SR60-3 (CA)	RIGHT LANE BUSES TAXIS ONLY AT ALL TIMES SR60-4 (CA)	RIGHT LANE BUSES ONLY AT ALL TIMES SR60-5 (CA)	RIGHT LANE TRAINS RIGHT TURNS ONLY AT ALL TIMES SR60-6 (CA)	RIGHT LANE BUS LANE ENDS SR60-7 (CA)	RIGHT LANE BUSES TAXIS ONLY 6AM - 9PM MON - FRI SR60-8 (CA)
RIGHT LANE BUSES TAXIS ONLY AT ALL TIMES SR60-9 (CA)	YOUR SPEED 37 Vehicle Speed Feedback Sign								

California Sign Chart

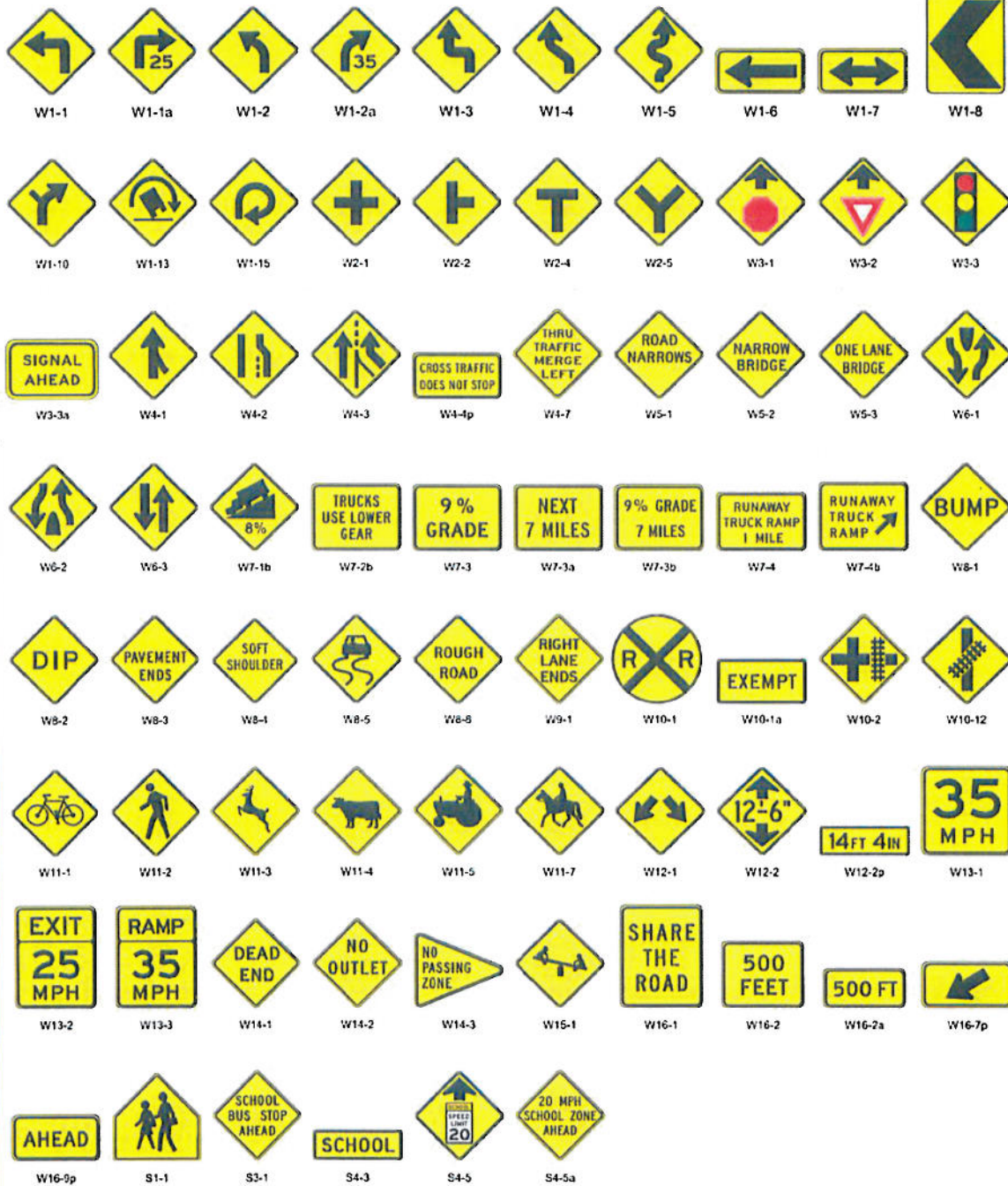
Sheet 5 of 12 - Federal Warning Signs

California Department of Transportation
Signs and Work Zones Branch
January 2010



This chart contains commonly used signs in California, and is not meant to be used as a comprehensive sign chart.

California codes are designated by (CA). Otherwise Federal codes are shown. For a complete directory of signs, visit www.dot.ca.gov/hq/traffops/signtech/signdel/index.htm.



California Sign Chart

Sheet 6 of 12 - California Warning Signs

California Department of Transportation
Signs and Work Zones Branch
January 2010



This chart contains commonly used signs in California, and is not meant to be used as a comprehensive sign chart.
California codes are designated by (CA). Otherwise Federal codes are shown. For a complete directory of signs, visit www.dot.ca.gov/hq/traffic/signtech/signel/index.htm.

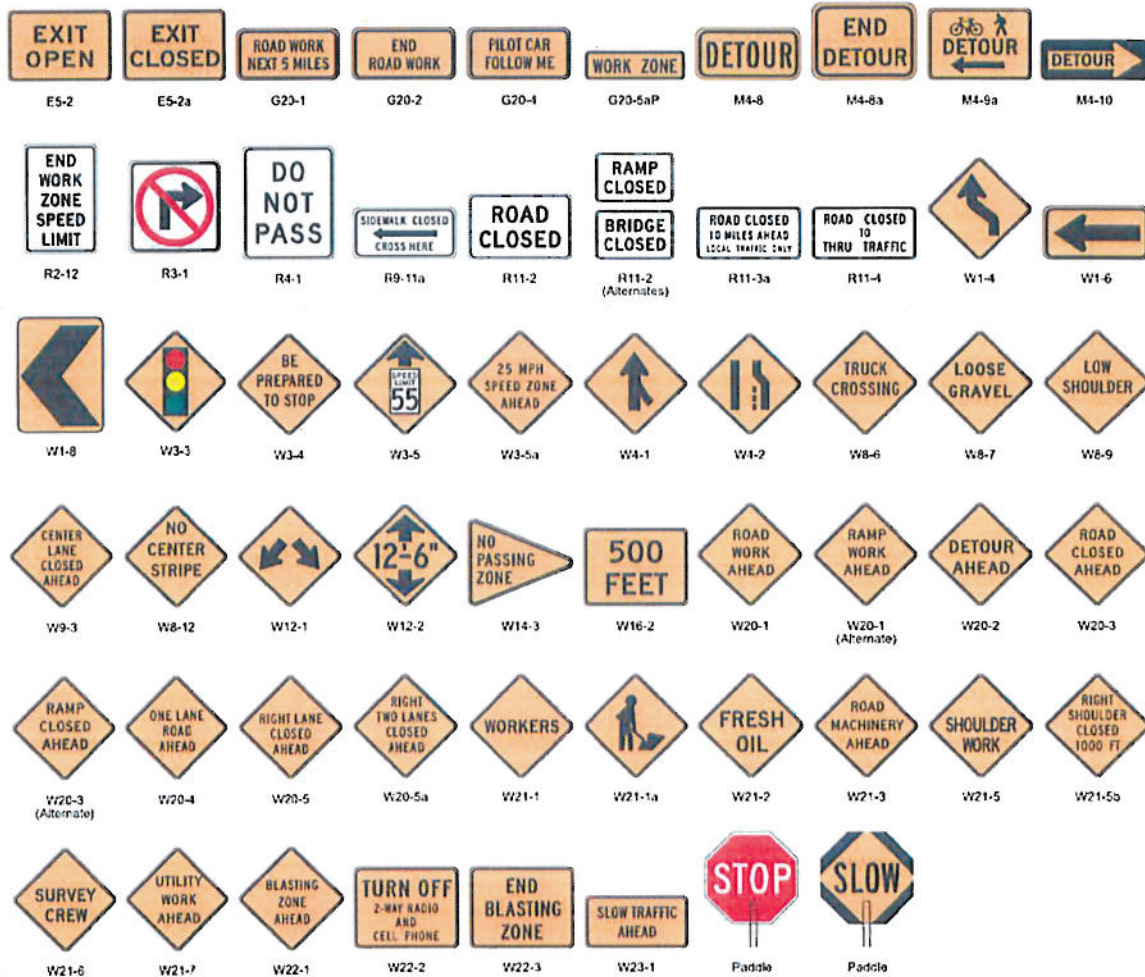
California Sign Chart

Sheet 11 of 12 - Federal Temporary Traffic Control Signs

This chart contains commonly used signs in California, and is not meant to be used as a comprehensive sign chart.

California codes are designated by (CA). Otherwise Federal codes are shown. For a complete directory of signs, visit www.dot.ca.gov/hq/traffops/signtech/signel/index.htm.

California Department of Transportation
Signs and Work Zones Branch
January 2010



California Sign Chart

Sheet 12 of 12 - California Temporary Traffic Control Signs

This chart contains commonly used signs in California, and is not meant to be used as a comprehensive sign chart.

California codes are designated by (CA). Otherwise Federal codes are shown. For a complete directory of signs, visit www.dot.ca.gov/hq/traffops/signtech/signsdel/index.htm.

California Department of Transportation
Signs and Work Zones Branch
January 2010

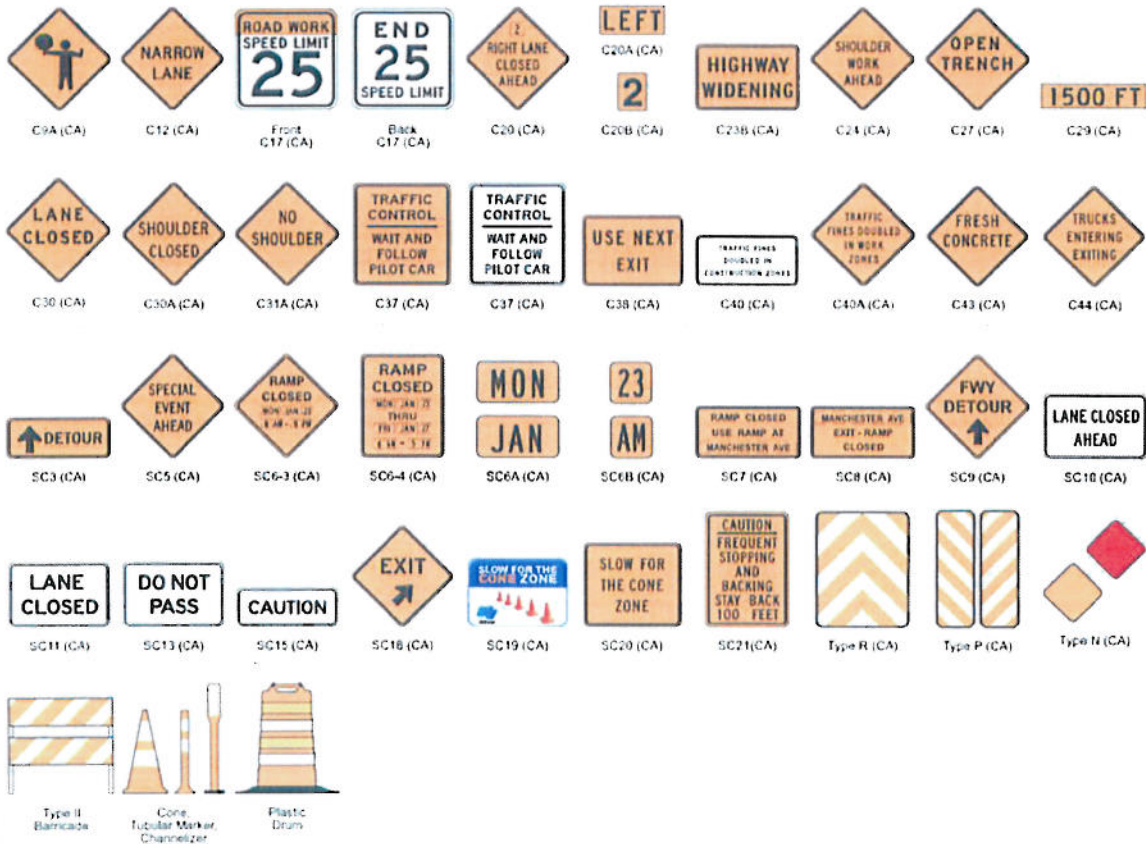


Table 2A-4 (CA). Common Uses of Sign Colors

Type of Sign	Legend						Background												
	Black	Green	Red	White	Yellow	Brown	Black	Blue	Brown	Green	Orange	Red	White	Yellow	Fluorescent Yellow-Green	Fluorescent Pink	Cream	Teal	Light Blue
Regulatory	X		X	X			X					X	X						
Prohibitive			X	X								X	X						
Permissive		X		X				X					X						
Warning	X													X					
Pedestrian	X													X	X				
Bicycle	X													X	X				
Playground	X													X	X				
School	X													X	X				
Guide				X						X									
Interstate Route				X				X				X							
Interstate Business Route				X						X									
State Route				X						X									
US Route	X												X						
County Route					X			X											
Forest Route				X					X										
Scenic Route				X															X
Bicycle Route				X						X									
Historic Route	X								X				X						
Reference Location				X						X									
Information				X						X									
Milepost				X						X									
Evacuation Route				X				X											
Road User Service				X				X											
Recreational				X					X										
Street Name				X						X									
Destination				X						X									
Boundary				X						X									
State Boundary	X				X														X
Place Name				X						X									
Structure Identification	X												X						
Historical Landmark						X											X		
Memorial				X						X									
Call Box				X				X											
Victims Memorial				X				X											
Adopt-A-Highway				X														X	
Temporary Traffic Control	X										X								
Incident Management	X										X					X			
Changeable Message Signs*					X	X	X												















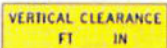





* Reverse colors or fluorescent yellow-green pixels may also be used on changeable message signs.

VG Attachment 4

California MUTCD
(FHWA's MUTCD 2003 including Revisions 1 & 2, as amended for use in California)

Page I-10

Figure I-101 (CA). Deleted California Signs with Target Compliance Dates

				
R16B (CA) January 1, 2010	R17B (CA) January 1, 2010	R19 (CA) January 1, 2010	R34A (CA) January 1, 2010	SR2-M (CA) January 1, 2007
				
SR3-M (CA) January 1, 2007	SR24-1 (CA) January 1, 2010	SR31 (CA) January 1, 2010	SR36 (CA) January 1, 2010	W54 (CA) January 1, 2011
				
W66 (CA) January 1, 2011	W66A (CA) January 1, 2011	SW1-1 (CA) January 1, 2007	SW6-M (CA) January 1, 2007	SW18-2.1 (CA) January 1, 2010
				
SW25 (CA) January 1, 2011	SW27 (CA) January 1, 2015	SW27-1 (CA) January 1, 2015	SW28 (CA) January 1, 2015	SW72-M (CA) January 1, 2007

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VG Attachment 5

California MUTCD
(FHWA's MUTCD 2003 including Revisions 1 and 2, as amended for use in California)

Page 7B-9

Figure 7B-1(CA). School Area Signs (Sheet 1 of 2)

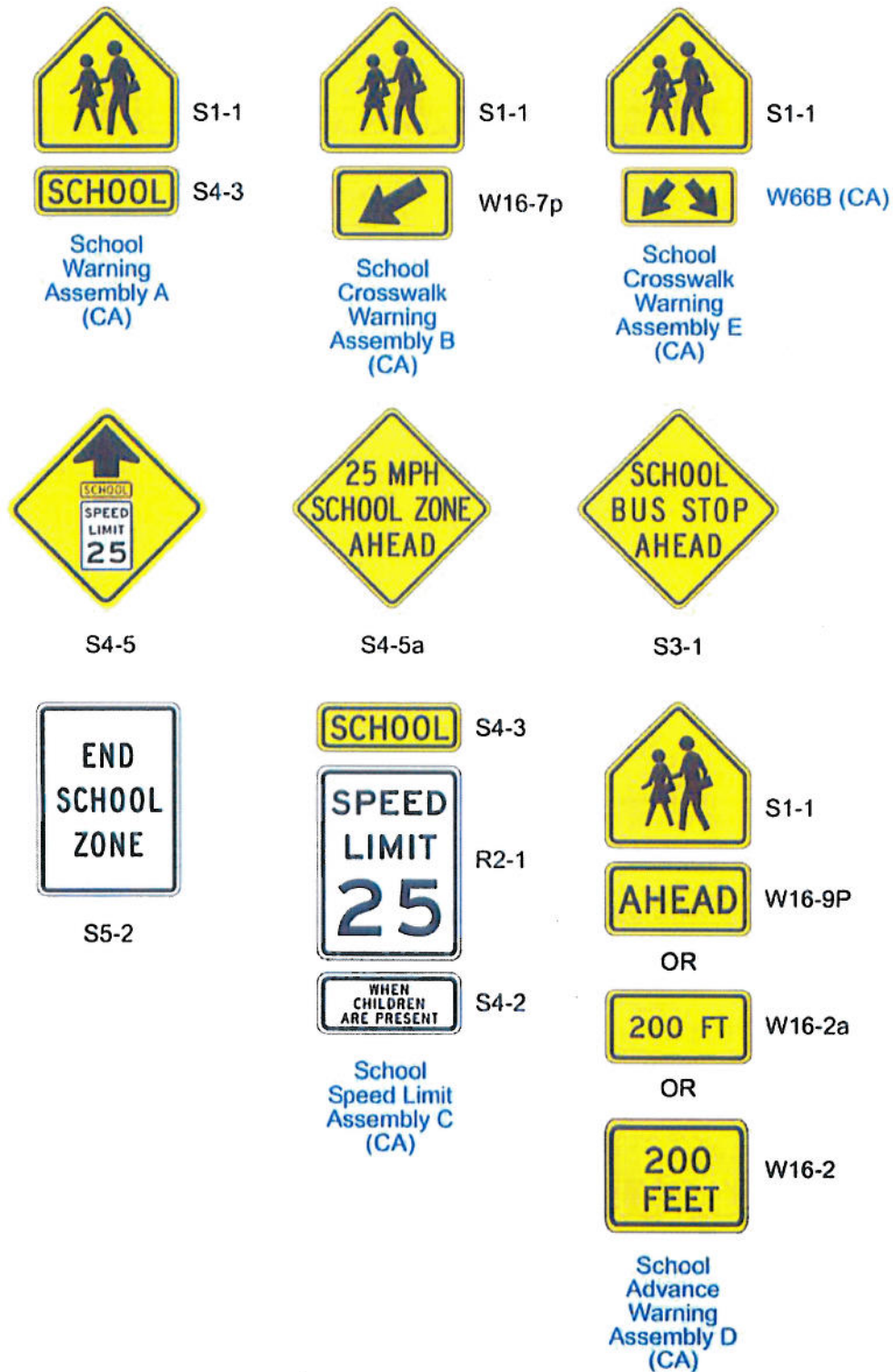
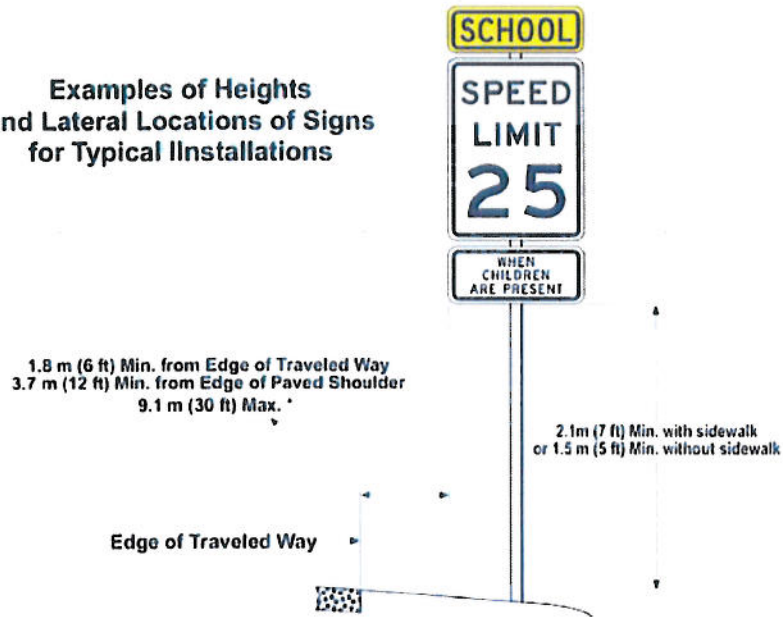
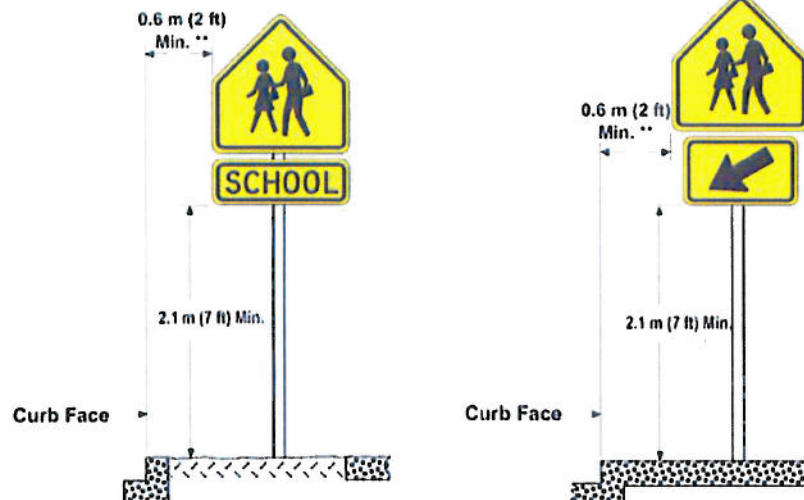


Figure 7B-1(CA). School Area Signs (Sheet 2 of 2)

**Examples of Heights
and Lateral Locations of Signs
for Typical Installations**



Rural Locations



**Urban Locations and Rural Locations
with Sidewalk**

NOTES:

- (*) When clear roadside recovery areas are provided, signs shall be placed as far from the edge of traveled way as possible, up to a maximum of 9.1 m (30 ft). When possible they shall be placed in locations less likely to be hit by a vehicle leaving the traveled way. Signs should not be closer than 1.8 m (6 ft) from the edge of a paved shoulder, or if none, 3.7 m (12 ft) from the edge of the traveled way.
- (**) In urban areas, where sidewalk width is limited or existing poles are close to the curb, a clearance of 0.3 m (1 ft) from the curb face is permissible.

The diagram illustrates a school zone layout with various traffic signs and road markings. Key elements include:

- Signs:**
 - S1-1:** School Ahead sign.
 - W66B (CA):** School Zone sign.
 - Assembly B or E:** Sign indicating a school zone.
 - Assembly D:** Sign indicating a school zone.
 - R1-1:** Stop sign.
 - Assembly A:** Sign indicating a school zone.
 - Assembly B or E:** Sign indicating a school zone.
 - Assembly D:** Sign indicating a school zone.
 - Assembly A:** Sign indicating a school zone.
 - Assembly B or E:** Sign indicating a school zone.
 - Assembly D:** Sign indicating a school zone.
 - Assembly A:** Sign indicating a school zone.
- Markings:**
 - Markings (Optional):** Indicated for various road markings.
 - See Section 2C.05:** Reference to the relevant section of the code.
- Dimensions:**
 - 0 to 150 m (500 ft) Maximum:** Indicated for various distances.
 - 150 m (500 ft) Maximum:** Indicated for various distances.
 - 30 m (100 ft):** Indicated for various distances.
- Other Features:**
 - SCHOOL:** A large rectangular sign indicating the school zone.
 - STOP:** A red octagonal stop sign.
 - Assembly A, B, D, E:** Various assembly points or zones.

Figure 7B-3(CA). Example of Signing for School Area Traffic Control with School Speed Limits

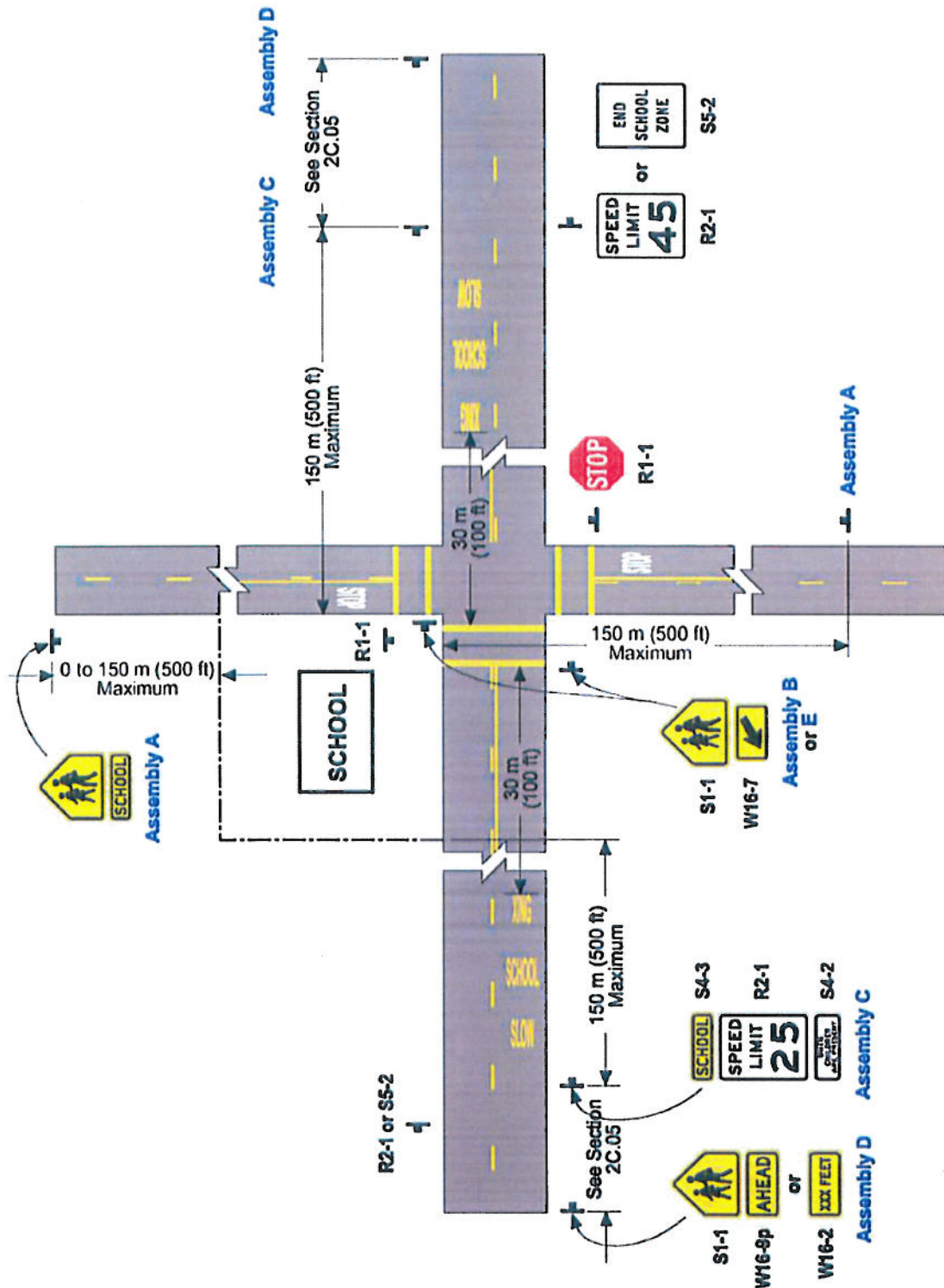


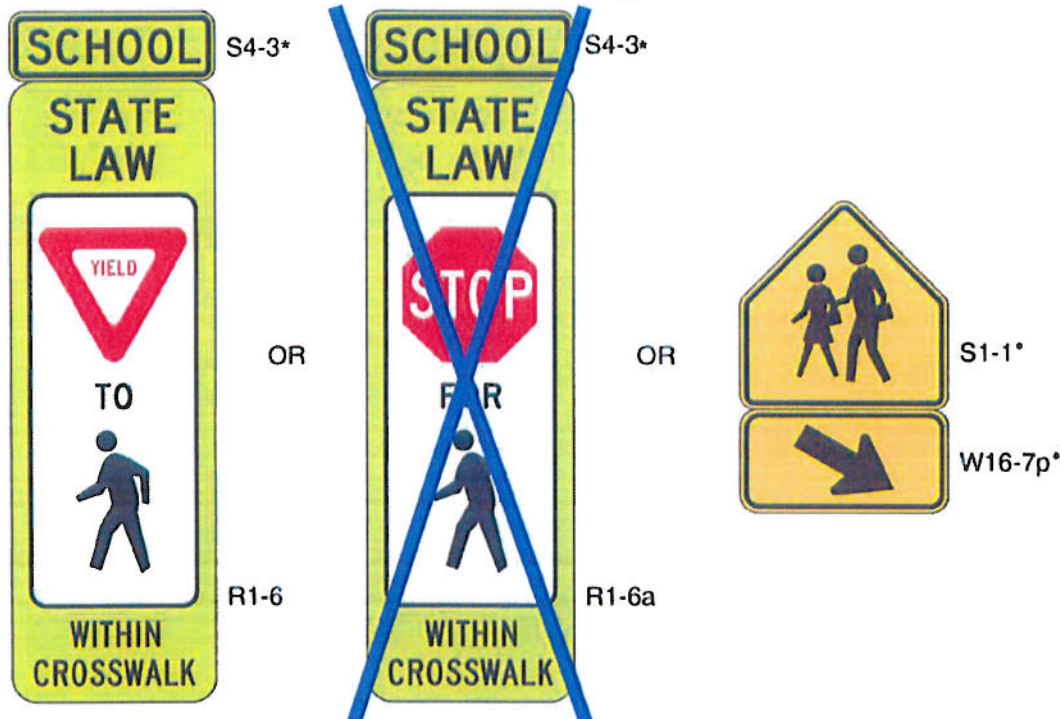
Figure 7B-4. In-Street Signs in School Areas

a - In advance of the school crossing



* Reduced size signs:
S1-1 300 x 300 mm (12 x 12 in)
W16-7p 300 x 150 mm (12 x 6 in)
W16-9p 300 x 150 mm (12 x 6 in)
S4-3 300 x 100 mm (12 x 4 in.)

b - At the school crossing



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Figure 7B-101 (CA). Example of School Area Signs with Flashing Yellow Beacons

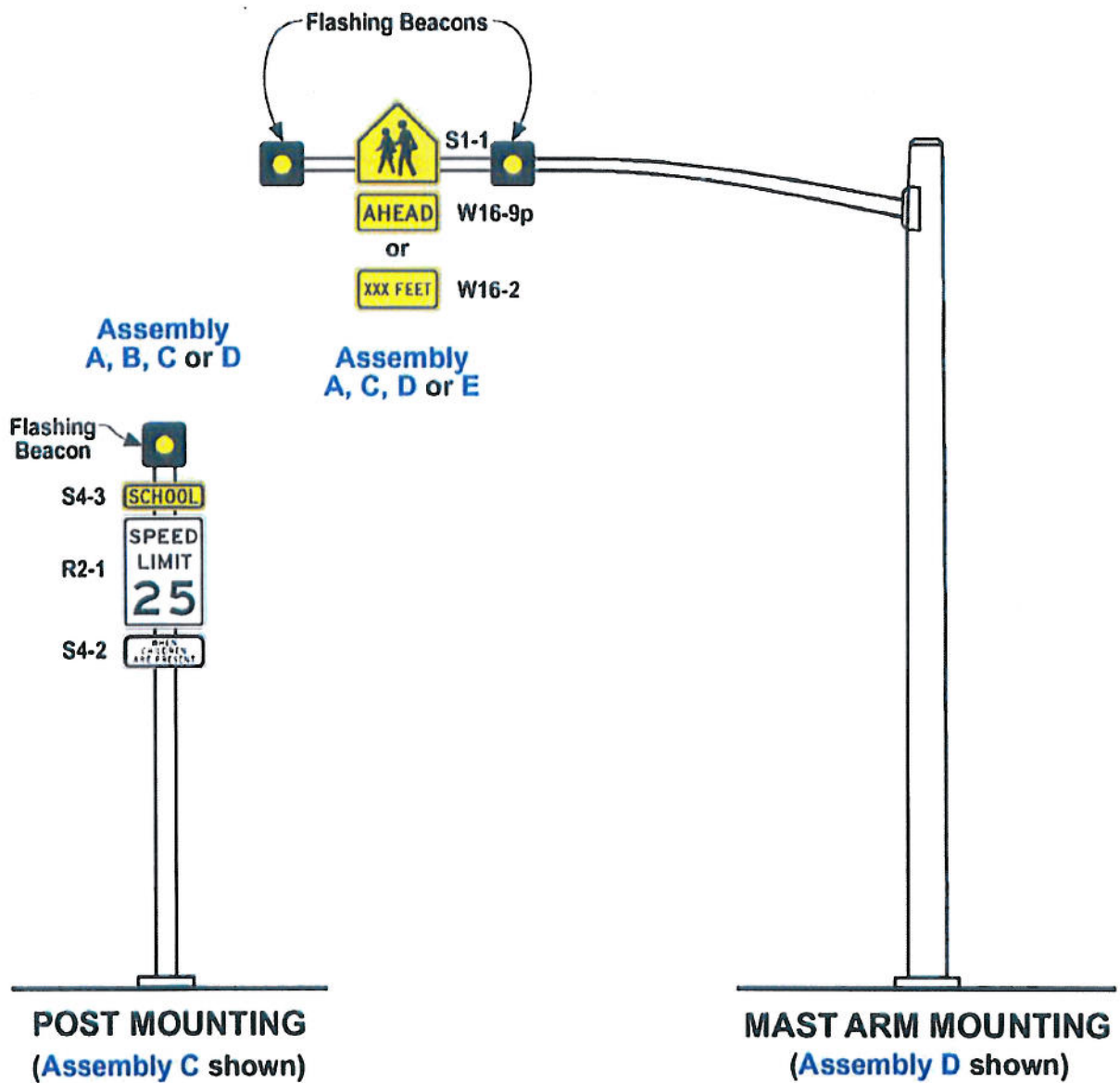


Figure 7B-102 (CA). Example of Signing for Traffic Control in School Areas with Flashing Yellow Beacons

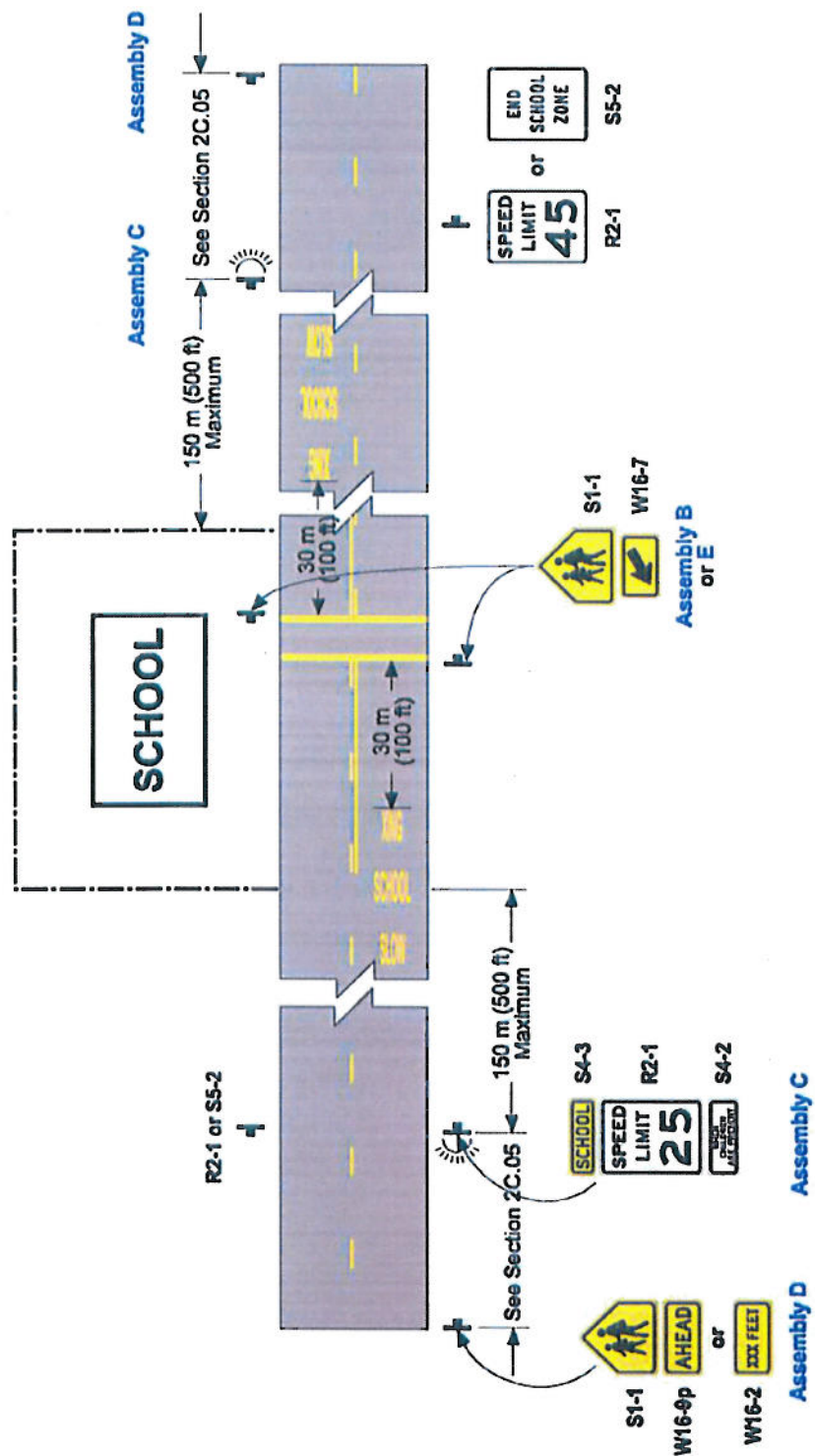


Figure 7B-103(CA). Example of Signing for School Area Traffic Control with Extended and/or Reduced School Zone Speed Limits

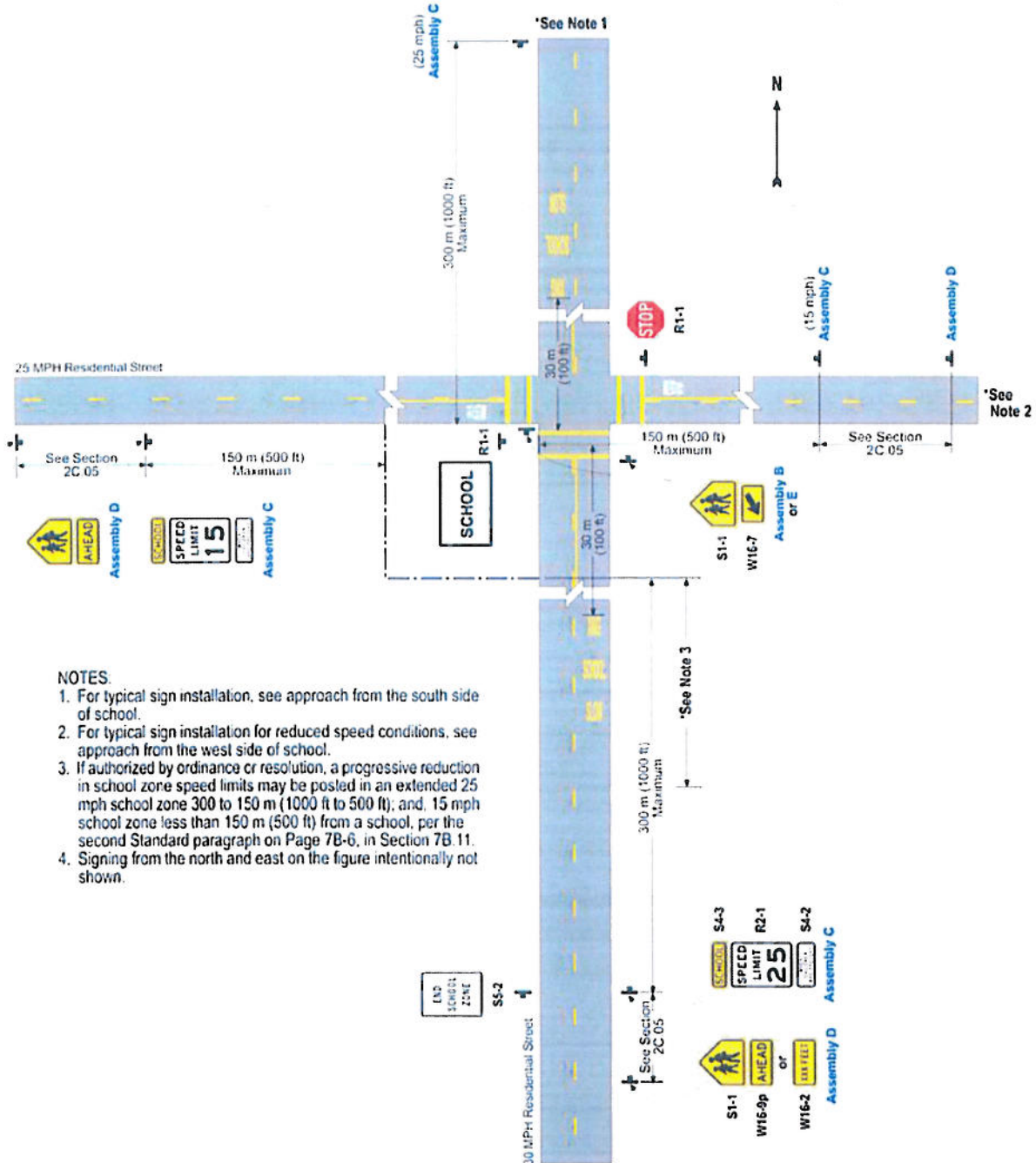
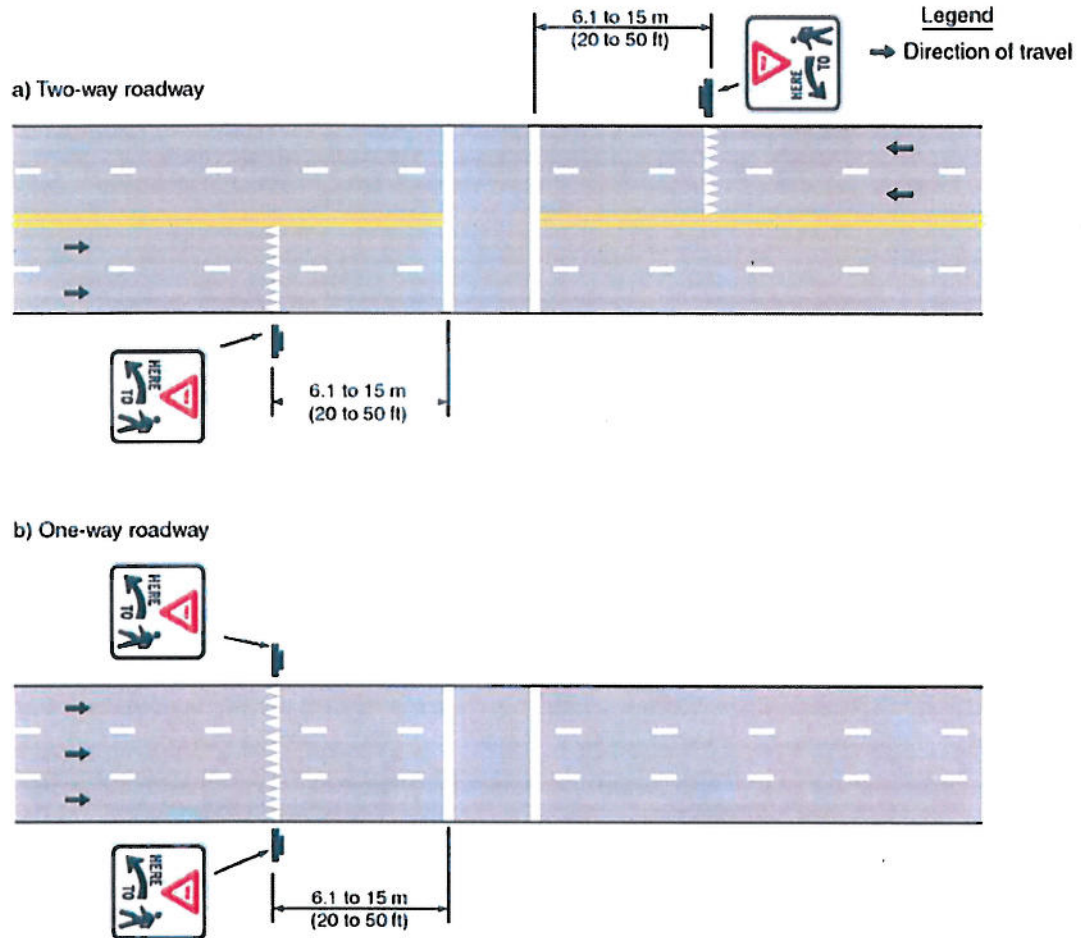


Figure 3B-15. Examples of Yield Lines at Unsignalized Midblock Crosswalks



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Figure 3B-16. Examples of Crosswalk Markings

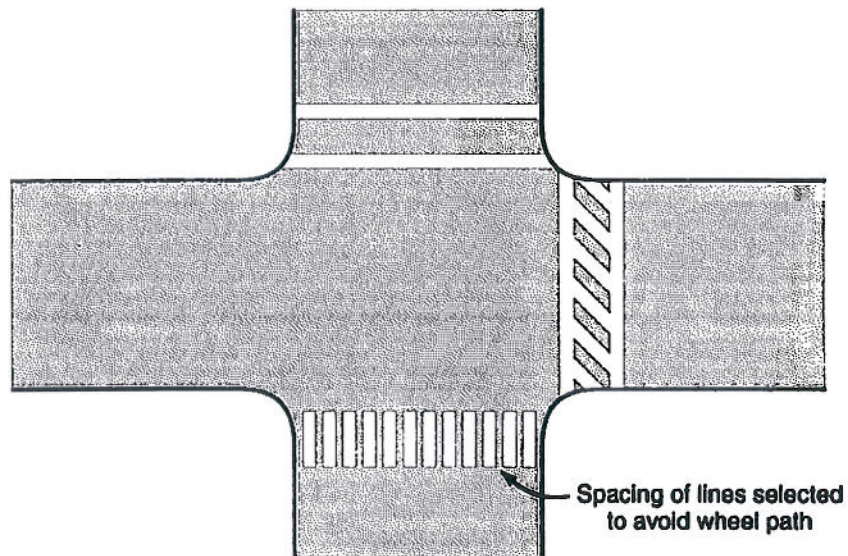


Figure 3B-17. Example of Crosswalk Markings for Exclusive Pedestrian Phase That Permits Diagonal Crossing

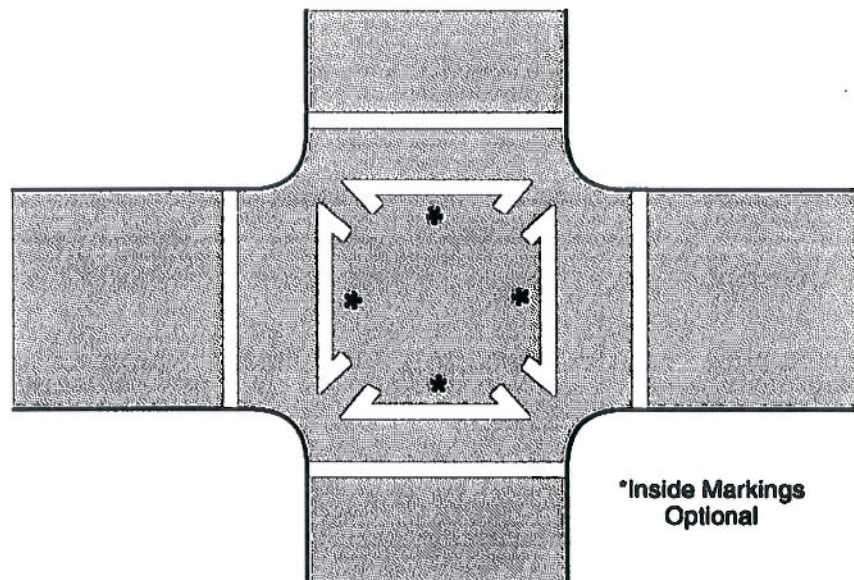


Figure 3B-27. Examples of Markings for Roundabout Intersections with One-Lane Approaches

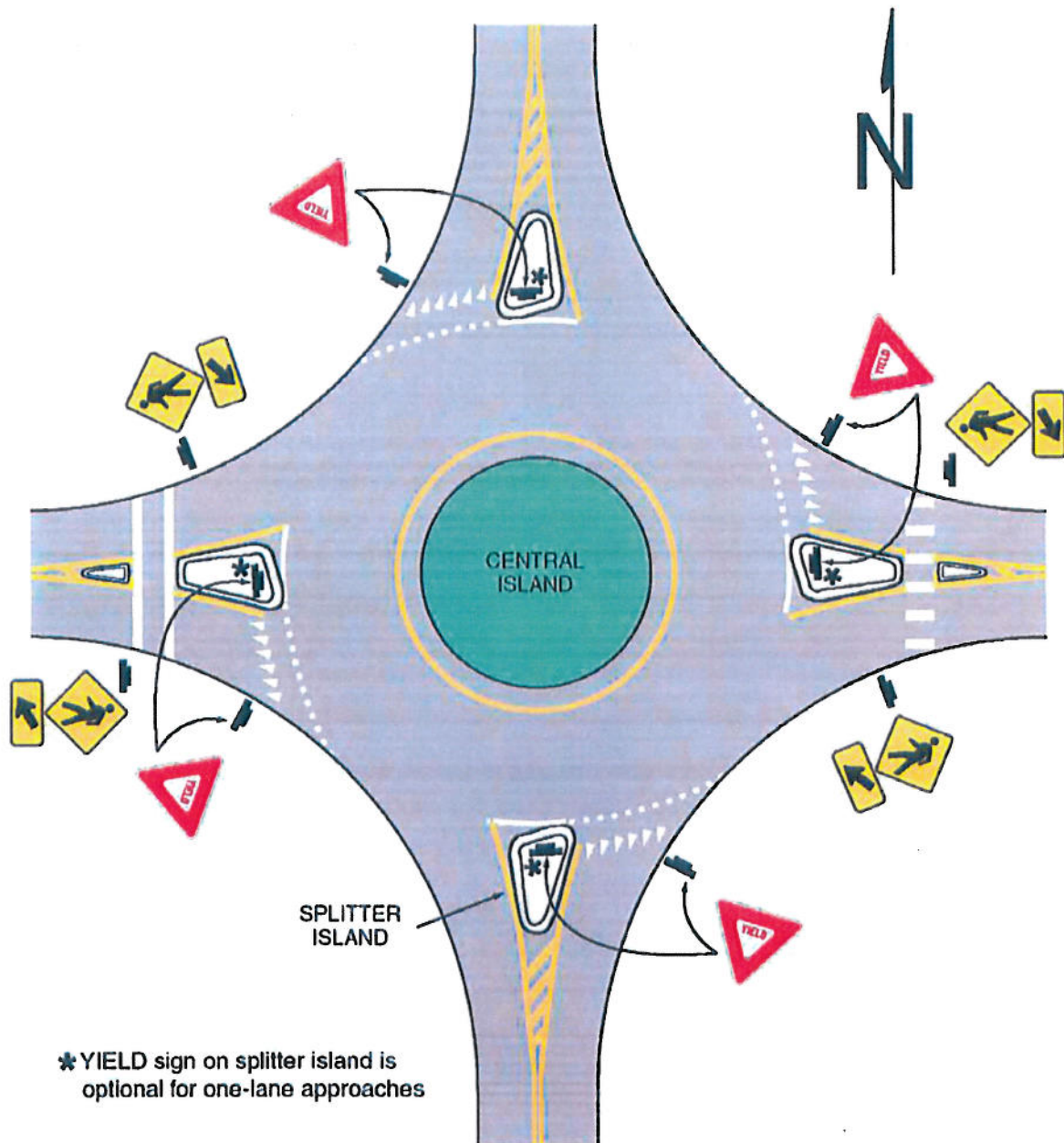
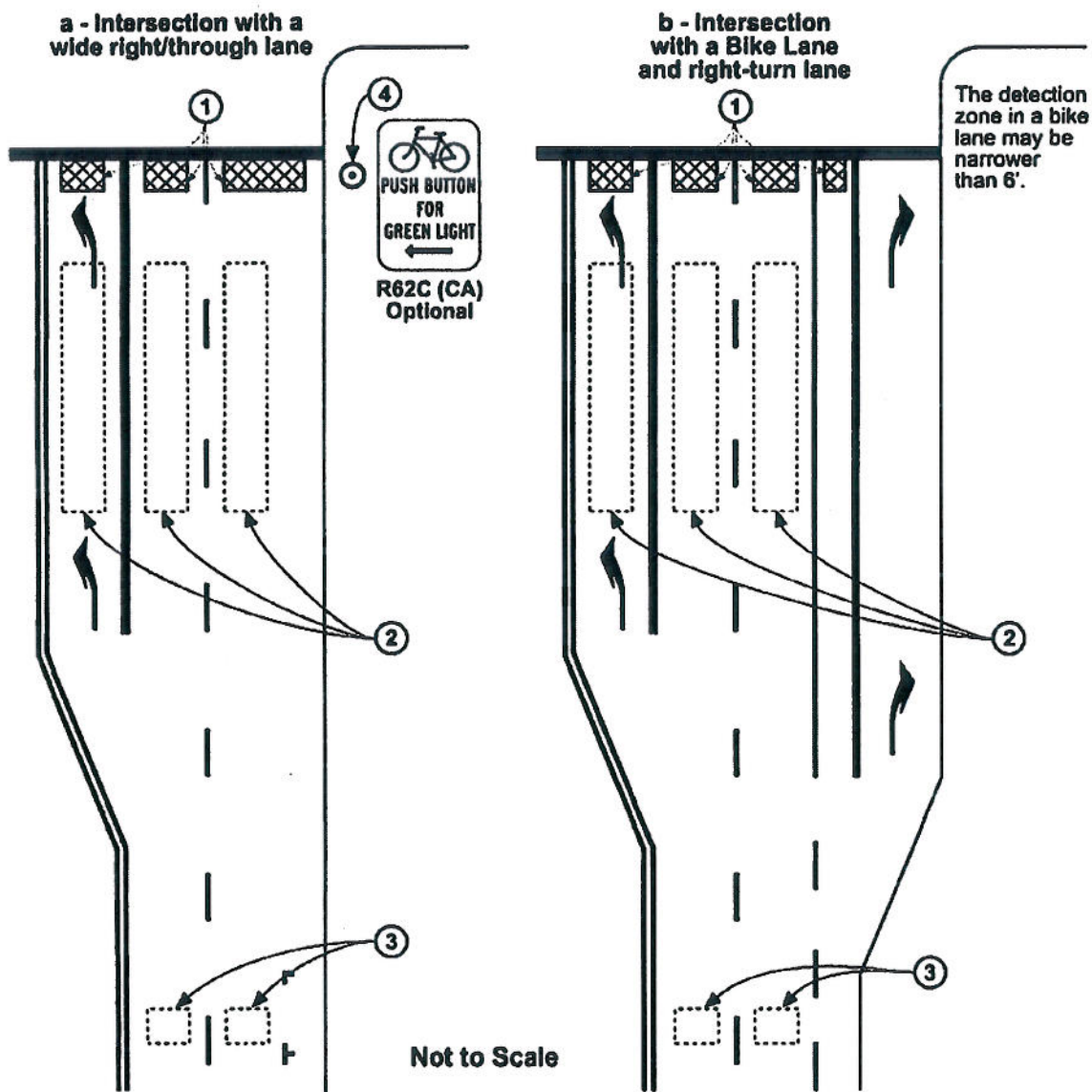


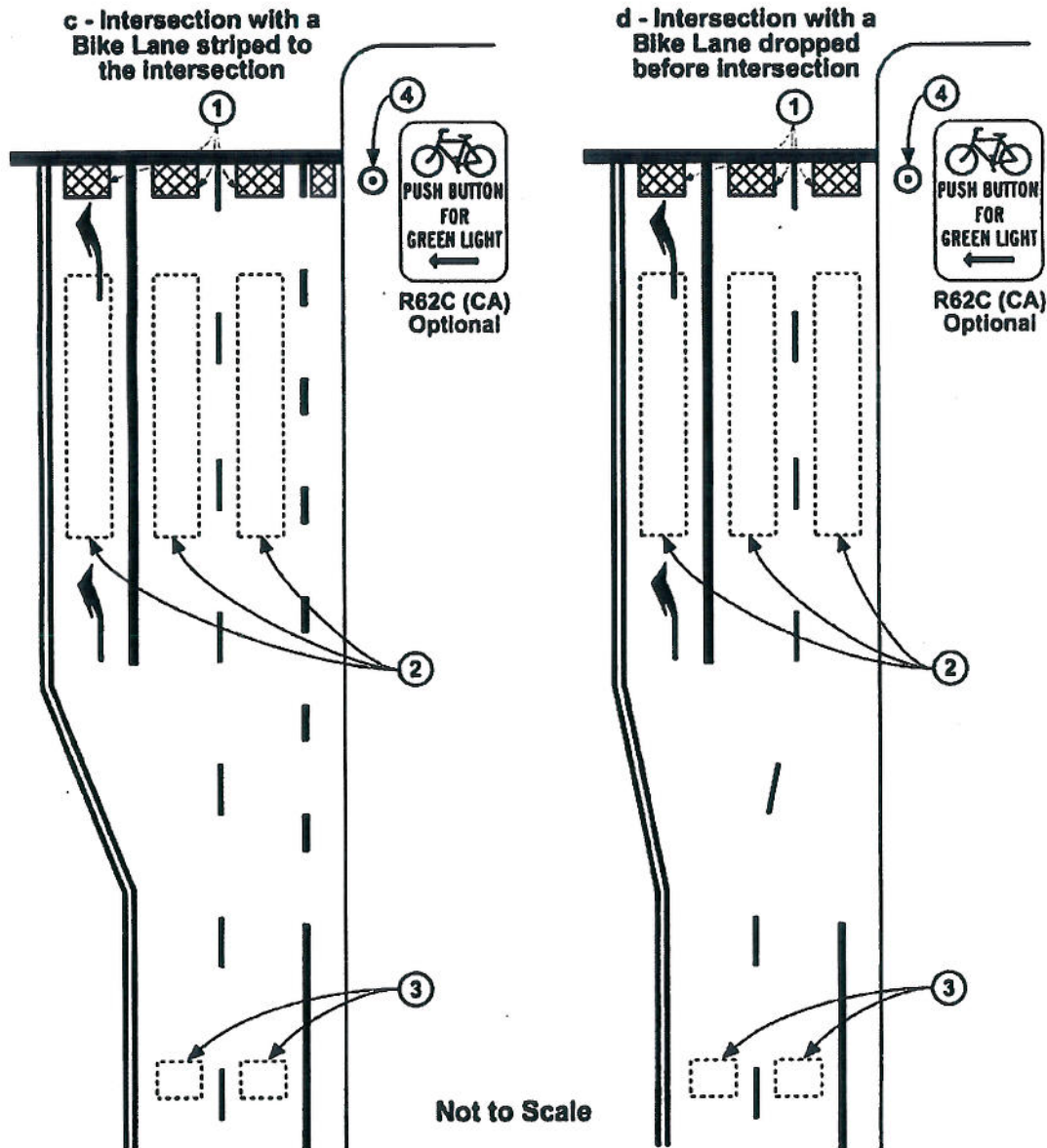
Figure 4D-111 (CA). Examples of Detection Systems (Sheet 1 of 3)



NOTES:

1. Typical technology-neutral limit line detection locations. See Section 4D.105 (CA).
2. Typical presence detection locations. See Section 4D.103 (CA).
3. Typical advance detection locations.
4. A bicyclist pushbutton may be used to activate a traffic signal to supplement the required limit line detection. A pushbutton should be located so it is convenient to use by bicyclists. See Section 9B.10 for bicycle regulatory signs.

Figure 4D-111 (CA). Examples of Detection Systems (Sheet 2 of 3)



NOTES:

1. Typical technology-neutral limit line detection locations. See Section 4D.105 (CA).
2. Typical presence detection locations. See Section 4D.103 (CA).
3. Typical advance detection locations.
4. A bicyclist pushbutton may be used to activate a traffic signal to supplement the required limit line detection. A pushbutton should be located so it is convenient to use by bicyclists. See Section 9B.10 for bicycle regulatory signs.

VG Attachment 8

Table 4D-109 (CA). Signal Operations - Minimum Bicycle Timing (English Units)

$$G_{\min} + Y + R_{\text{clear}} \geq 6 \text{ sec} + (w+6 \text{ ft})/14.7 \text{ ft/sec, where}$$

G_{\min} = Length of minimum green interval (sec)

Y = Length of yellow interval (sec)

R_{clear} = Length of red clearance interval (sec)

W = distance from limit line to far side of last conflicting lane (ft)

Distance from limit line to far side of last conflicting lane	Minimum phase length (minimum green plus yellow plus red clearance)
Feet	Seconds
40	9.1
50	9.8
60	10.5
70	11.2
80	11.9
90	12.5
100	13.2
110	13.9
120	14.6
130	15.3
140	15.9
150	16.6
160	17.3
170	18.0
180	18.7